

1. First carpal bone to appear is?

a) Trapezium

b) Capitate

c) Pisiform

d) Lunate

Correct Answer - B

Ans. is 'B' i.e., Capitate [Ref Reddy's Essentials 26th/e p. 63]

The ossification centres in carpal bones appear as follows :

n Capitate	1 year	n Hamate	2 years
n Triquetrum	3 years	n Lunate	4 years
n Scaphoid and trapezoid	5 years	n Trapezium	6 years
n Pisiform	11 years		

2. Pharyngeal muscles are derived from which pharyngeal arch ?

a) 1st

b) 2nd

c) 3rd

d) 5th

Correct Answer - C
3rd

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3. Spinal cord develops from ?

a) Neural tube

b) Mesencephalon

c) Rhombencephalon

d) Prosencephalon

Correct Answer - A

Ans. is 'a' i.e., Neural tube

- Nervous system develops from ectoderm (neuroectoderm). Nervous system develops from neural tube which in turn develops by process of neurulation, i.e. formation of neural plate and its infolding into neural tube. Structures formed from neural tube are :?
 1. From cranial part (enlarged cephalic part)
- Gives rise to brain. Developmental parts are :
Forebrain (prosencephalon)
- Telencephalon : Cerebral hemisphere and lateral ventricle.
- Diencephalon : Optic cup and stalk (gives rise to retina), pituitary, thalamus, hypothalamus, epithalamus, pineal gland, and third ventricle.
- **Midbrain (mesencephalon)**
- Cerebral aqueduct.
- **Hindbrain (rhombencephalon)**
- Metencephalon : Cerebellum, pons
- Myelencephalon : Medulla oblongata
 2. From caudal part
- Gives rise to spinal cord.

4.

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Collecting part of kidney develops from ?

a) Pronephrons

b) Mesonephros

c) Metanephros

d) Ureteric bud

Correct Answer - D

Ans. is 'd' i.e., Ureteric bud

Development of kidney

- Kidneys develop from two sources :
- Metanephros (metanephric mesoderm or blastema) : It is the lowest part of nephrogenic cord which is derived from intermediate mesoderm. It forms the excretory unit of kidney i.e. glomerulus, proximal convoluted tubule, loop of henle and distal convoluted tubule.
- Ureteric bud : It arises from lower part of mesonephric duct. It forms collecting part of kidney (pelvis, major calyces, minor calyces, collecting tubules) and ureter.

5. which level the somites initially form ?

a) Thoracic level

b) Cervical level

c) Lumbar level

d) Sacral level

Correct Answer - B

Ans. is 'b' i.e., Cervical level

- The first pair of somites develop a short distance posterior to the cranial end of the notochord, and the rest of the somites from caudally.
- "By the 20" day, the first pair of somites have formed in neck region." Textbook of embryology
- Paraxial mesoderm differentiates into somites. By the end of 20th day, the first pair of somites have formed in neck region. After this, about 3 pairs of somites are formed per day and by the end of 5" week about 42-44 somite pairs are formed (4-occipital, 8-cervical, 12-thoracic, 5-lumbar, 5-sacral and 8-10 coccygeal). Somites are further differentiated into :-
- Dermatomeyotome :- Give rise to skeletal muscles and dermis.
- Sclerotomes :- Give rise to vertebral column.

6. Double inferior vena cava is formed due to?

- a) Persistence of sacrocardinal veins
- b) Persistence of supracardinal veins
- c) Persistence of subcardinal veins
- d) Persistence of both supracardinal and subcardinal veins

Correct Answer - D

Ans. is 'd' i.e., Persistence of both supracardinal and subcardinal veins

Developmental anomalies of veins

A. Anomalies of SVC

- Left superior vena cava is formed when left anterior cardinal and common cardinal veins persist and the right ones obliterate. Left SVC opens into right atrium through the coronary sinus.
- Double superior vena cava occurs due to persistence of left anterior cardinal vein. The right SVC opens directly into right atrium while left one opens through coronary sinus.

B. Anomalies of IVC

- Absence of inferior vena cava above renal veins occurs when the anastomotic channel between right subcardinal vein and right hepatocardinal channel fails to develop.
- Double inferior vena cava is formed below renal veins due to persistence of both the subcardinal and supracardinal veins below the kidney.
- Left inferior vena cava, i.e. infrarenal part of IVC is formed on left side instead of right.
- Preureteric IVC is formed when infrarenal part of IVC develops from subcardinal vein (which lies anterior to ureter) instead of

supracardinal vein (which lies posterior to ureter).

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7. Jelly formed around the heart tube during early development, contributes to the formation of:

a) Pericardium

b) Mesocardium

c) Myocardium

d) Endocardium

Correct Answer - C

C i.e. Myocardium

Dorsal mesocardium forms transverse pericardial sinus;
somatopleuric mesoderm forms parietal pericardium;
splanchnopleuric mesoderm forms myocardium & conduction system of hearts (i.e. Purkinje fibers); neural crest cells form subpulmonary infundibulum.
Cardiac jelly forms endocardial cushion and myocardium

8. The retina is an out growth of the ?

a) Mesencephalon

b) Diencephalon

c) Telencephalon

d) Pons

Correct Answer - B

Ans. is 'b' i.e., Diencephalon

- Diencephalon forms - optic cup and stalk, pituitary, thalamus, hypothalamus, epithalamus, pineal gland (or epiphysis), and 3rd ventricle (most part).
- Retina develops from walls of optic cup. The outer thinner layer becomes retinal pigmented epithelium and inner thicker layer forms neural layer of retina.
- Forebrain (prosencephalon) consists of telencephalon (anterior or rostral part) and diencephalon (posterior or caudal part).

9. Arch of Aorta develops from which aortic arch artery ?

a) Right P^t

b) Right 3rd

c) Left 4th

d) Left 3rd

Correct Answer - C

Ans. is 'c' i.e., Left 4th

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10. Muscle of third arch ?

a) Tensor tympani

b) Stylopharyngeus

c) Cricothyroid

d) None

Correct Answer - B

Ans. is 'b' i.e., Stylopharyngeus

- Stylopharyngeus is the muscle of 3rd pharyngeal arch.

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11. Sinus venosus receives blood from all except ?

a) Vitelline vein

b) Umbilical vein

c) Common cardinal vein

d) Subcardinal vein

Correct Answer - D

Ans. is 'd' i.e., Subcardinal vein

Sinus venosus : It is the caudal most part of tubular heart. At its lower end it presents right and left horns. Each horn receives blood from following three veins :

1. Vitelline vein from yolk sac. Right vitelline vein forms terminal part of inferior vena cava.
2. Umbilical vein from placenta.
3. Common cardinal vein from body wall. Right common cardinal vein forms superior vena cava.

12. Mastoid process is which type of epiphysis

a) Pressure

b) Aberrant

c) Atavistic

d) Traction

Correct Answer - D

Ans. is 'd' i.e., Traction

Types of epiphysis

- The epiphysis are of following four types :?
 1. Pressure epiphysis : It is covered by an articular cartilage and takes part in the transmission of body weight, e.g. head of femur, head of humerus, condyles of tibia, lower end of radius etc.
 2. Traction epiphysis : It is non-articular and does not take part in weight transmission. It is produced by a pull of the muscle. Examples are greater and lesser trochanters of femur, greater and lesser tubercles of humerus and mastoid process.
 3. Atavistic epiphysis : It is an independent bone in lower mammals, which in man gets fused to the nearest bone to receive nutrition from the host bone. Examples are coracoid process of scapula, posterior tubercle of talus (os trigonum), etc.
 4. Aberrant epiphysis : It is an epiphysis which appears at unusual end of a short long bone, e.g. head of Pt metacarpal and base of other metacarpals.

13. Collagen found in hyaline cartilage is ?

a) Type I

b) Type II

c) Type IV

d) Type v

Correct Answer - B
Ans. is 'b' i.e., Type II

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14.

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Billorth's cord are present in which part of spleen?

a) White pulp

b) Red pulp

c) Both

d) Capsule

Correct Answer - B

Ans. is 'b' i.e., Red pulp

Histology of spleen

- Spleen has a capsule which is mainly composed of collagen with some elastin. Trabeculae are septae pass inwards from the capsule. Spleen is mainly composed of two parts :
 - 1. White pulp : The white pulp of the spleen is formed of mass of T and B lymphocytes surrounding central artery, arranged as lymphoid nodule. Each nodule is also called Malpighian bodies. Marginal zone surrounds the white pulp and contains antigen presenting cells as macrophages.
 - 2. Red pulp : Red pulp is made up of a mesh of leaky sinusoids (vascular sinuses) through which the red cells are squeezed. Adjacent blood spaces contain blood cells and arranged in cords called splenic cords of billorth.

15.

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B-cells are dispersed in which part of spleen?

a) White pulp

b) Red pulp

c) Capsule

d) None

Correct Answer - A
Ans. is 'a' i.e., White pulp

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16.

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Follicles are present in which part of lymph nodes ?

a) Red pulp

b) White pulp

c) Cortex

d) Medulla

Correct Answer - C
Ans. is 'c' i.e., Cortex

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17. Hyoid lies at the level of ?

a) C₃

b) C₄

c) C₇

d) T₂

Correct Answer - A

Ans. is 'a' i.e., C₃

Surface anatomy of larynx are :

- C₂ Level of body of hyoid and its greater cornu.
- C₃ - C₄ Junction Level of upper border of thyroid cartilage and bifurcation of common carotid artery.
- C₄ - C₅ Junction Level of thyroid cartilage.
- C₆ Level of cricoid cartilage.

18. Pubic symphysis is which type of joint ?

- a) Gomphosis
- b) Fibrous joint
- c) Primary cartilaginous
- d) Secondary cartilaginous

Correct Answer - D

Ans. is '**d**' i.e., Secondary cartilaginous

Pubic symphysis is a secondary cartilaginous joint (symphysis or fibrocartilaginous joint).

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19. Epithelial lining of urinary bladder ?

a) Squamous

b) Transitional

c) Cuboidal

d) Columnar

Correct Answer - B

Ans. is 'b' i.e., Transitional

- Urothelium (transitional epithelium) is found in renal pelvis, calyces, ureter, urinary bladder, proximal part of urethra.

20. True about cardiac muscle is ?

a) Spindle shaped

b) Large central nucleus

c) No gap junctions

d) Arranged in sheets

Correct Answer - B

Ans. is 'b' i.e., Large central nucleus

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21. Clavipectoral fascia is derived from which ligament ?

a) Coracoacromial

b) Coracoclavicular

c) Costoclavicular

d) Costocoracoid

Correct Answer - D

Ans. is 'd' i.e., Costocoracoid

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22. All are infraclavicular branches of brachial plexus except ?

a) Ulnar nerve

b) Long thoracic nerve

c) Axillary nerve

d) Thoracodorsal nerve

Correct Answer - B

Ans. is 'b' i.e., Long thoracic nerve

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23. Root value of thoracodorsal nerve ?

a) C₅, C₆, C₇

b) C₈, T₁

c) C₆, C₇, C₈

d) T_i T₂

Correct Answer - C

Ans. is 'c' i.e., C₆C₇C₈

Branches of brachial plexus

- Branches of brachial plexus arises from different anatomical segments : -
 - 1. Branches of the roots**
 - Nerve to serratus anterior (long thoracic nerve) (C₅, C₆, C₇).
 - Nerve to rhomboideus (dorsal scapular nerve) (C₅).
 - 2. Branches of the trunks**
 - These arise only from the upper trunk which gives two branches. I. Suprascapular nerve (C₅, C₆)
 - Nerve to subclavius (C₅, C₆)
 - 3. Branches of the cords**
 - 1. Branches of lateral cord**
 - Lateral pectoral (C₅-C₇)
 - Musculocutaneous (C₅-C₇)
 - Lateral root of median (C₅-C₇)
 - 2. Branches of medial cord**
 - Medial pectoral (C₈, T₁)
 - Medial cutaneous nerve of arm (C₈, T₁)
 - Medial cutaneous nerve of forearm (C₈, T₁).

- Ulnar (C7, C8, T₁). C7 fibres reach by a communicating branch from lateral root of median nerve.
- Medial root of median (C₈, T₁).

3. Branches of posterior cord

- Upper subscapular (C₅, C₆)
- Nerve to latissimus dorsi (thoracodorsal) (C₆, C₇, C₈)
- Lower subscapular (C₅, C₆)
- Axillary (circumflex) (C₅, C₆)
- Radial (C₅-C₈, T₁)

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24. Largest branch of brachial plexus is

a) Ulnar

b) Medial

c) Radial

d) Axillary

Correct Answer - C

Ans. is 'c' i.e., Radial

- Radial nerve is the largest branch of brachial plexus and is the continuation of posterior cord (root value C_{5_8} T1).

25. A person had injury to right upper limb he is not able to extend fingers but able to extend wrist and elbow. Nerve injured is ?

a) Radial

b) Median

c) Ulnar

d) Posterior interosseus

Correct Answer - D

Ans. is 'd' i.e., Posterior interosseus

In posterior interosseus nerve injury, wrist extension is preserved due to spared ECRL, hence there is no wrist drop.

There is loss of extension of metacarpophalangeal joints, hence thumb and finger drop occurs. o In radial nerve injury, there is wrist drop.

Clinical features of radial nerve palsy

- Clinical features depend upon the site of lesion.
 1. If lesion is high
- Wrist drop, thumb drop and finger drop.
- Inability to extend elbow, wrist, thumb & fingers (MP joint)
- Patient can extend interphalangeal joints due to action of lumbricals and interossei.
- Sensory loss over posterior surface of arm & forearm and lower lateral half of forearm.

2. If lesion is low

Type I

- Wrist drop, thumb drop and finger drop.
- Elbow extension is preserved.

- Sensory loss over the dorsum of first web space.

Type H

- Thumb drop and finger drop
- Elbow and wrist extension is preserved
- Sensory loss over the dorsum of first web space
- Clinical features of posterior interosseus nerve
- It is prone to be injured in injury & operations of radial head- neck .
- There is no sensory deficit as it is a pure motor nerve.
- Wrist extension is preserved (i.e. no wrist drop) due to spared extensor carpi radialis longus .
- Presents with loss of extension of metacarpophalangeal (MP) joints i.e., thumb & finger drop.

26. Which muscle will be paralyzed when radial nerve is injured in just below the spiral groove ?

a) Lateral head of triceps

b) Medial head of triceps

c) Long head of triceps

d) ECRL

Correct Answer - D

Ans. is 'd' i.e., ECRL

Radial nerve injury

- Radial nerve injury may be high or low.
 1. High radial nerve palsy
- Injury is before the spiral groove
- All muscles supplied by radial nerve are paralysed.
 2. Low radial nerve palsy
- Injury is after the spiral groove.
- Low radial nerve palsy may be of two types.

Injury occurs between the spiral groove and elbow joint.

Muscles involvement is : ?

- Elbow extensors (Triceps, anconeus) are spared.
- Wrist, elbow and finger extensors are paralysed.
- Sensory loss in first web space (on dorsal side)

Injury occurs below the elbow joint.

- Elbow extensors (triceps, anconeus) and wrist extensors (ECRL) are spared.
- Finger extensors (extensor digitorum, extensor digiti minimi, extensor indicis) and thumb extensors (extensor pollicis longus &

- brevis) are paralysed.
- Sensory loss in first web space (on dorsal side).

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27. In arm ulnar nerve gives muscular branch to which muscle ?

a) FCU

b) FDP

c) Both

d) None

Correct Answer - C

Ans. is 'C' i.e., both

Reference BDC 4th edition volume 1 , pg 157.

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28. Distal end of humerus develops from how many centres ?

a) 2

b) 5

c) 3

d) 4

Correct Answer - D

Ans. is 'd' i.e., 4

Part of humerus → Ossification

Shaft → One primary center

Upper end Three secondary centers ?

1. One for head (appears in 1st year).
2. One for greater tubercle (appears in 2nd year).
3. One for lesser tubercle (appears in 5th year).
- This three centers fuses together during 6th year and finally with shaft during 20th year.

Lower end Four secondary centers

1. One for capitulum & lateral flange of trochlea (1st year).
2. One for medial flange of trochlea (9th year).
3. One for lateral epicondyle (12th year).
4. These three fuse during 14th year to form one epiphysis which fuses with shaft at 16 years.
5. One for medial epicondyle (4-6 years), which separately fuses with shaft during 20th year.

29. Radial bursa is the synovial sheath covering the tendon of ?

a) FDS

b) FDP

c) FPL

d) FCR

Correct Answer - C

Ans. is 'c' i.e., FPL

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30. All are true regarding axillary lymph nodes except?

- a) Posterior group lies along subscapular vessels
- b) Lateral group lies along lateral thoracic vessels
- c) Apical group lies along axillary vessels
- d) Apical group is terminal lymph nodes

Correct Answer - B

Ans. is 'b' i.e., Lateral group lies along lateral thoracic vessels

Axillary lymph nodes

- The axillary lymph nodes are divided into 5 groups :?
- 1. Anterior (pectoral) group :- Lie along lateral thoracic vessels, i.e. along the lateral border of pectoralis minor. They receive lymph from upper half of the anterior wall of trunk and from major part of breast.
- 2. Posterior (scapular) group :- Lie along the Subscapular vessels. They receive lymph from the upper half of the posterior wall of trunk and axillary tail.
- 3. Lateral group :- Lie along the upper part of the humerus, medial to the axillary vein. They receive lymph from upper limb.
- 4. Central group :- Lie in the fat of the upper axilla. They receive lymph from the preceding groups and drain into apical group. The intercostobrachial nerve is closely related to them.
- 5. Apical (infraclavicular) group :- Lie deep to the clavipectoral fascia along the axillary vessels. They receive lymph from central group, upper part of breast and the thumb and its web. These are called terminal group of lymph nodes, as they receive lymphatics from other nodes of breast.

31. All are true about mammary gland, except ?

- a) Is a modified sweat gland
- b) Extends from 2nd to 6th rib vertically
- c) Supplied by internal mammary artery
- d) Nipple is supplied by 6th intercostal nerve

Correct Answer - D

Ans. is 'd' i.e., Nipple is supplied by 6th intercostal nerve

Mammary gland

- Breast (mammary gland) is a *modified sweat gland* present in the superficial fascia of pectoral region.
- Vertically it extend from 2nd to 6th ribs at midclavicular line and horizontal extent is from sternal margin to midaxillary line at the level of 4th rib

Arterial supply of breast includes ?

Perforating branches of internal mammary artery in II,III, IV intercostal spaces.

Thoracoacromial, lateral thoracic and superior thoracic branches of axillary.

Mammary branches, from 2nd, 3rd and 4th posterior intercostal arteries.

Venous Drainage

- There is an anastomotic circle of veins around the base of nipple-the circulus venosus of Haller.
- Veins from this and from the glandular tissue radiate to the circumference of the gland and drain into axillary, internal mammary and posterior intercostal veins.

Nerve supply

- Sensory and sympathetic innervation is via anterior and lateral cutaneous branches of 4th, 5th and 6th intercostal nerves.
- Nipple is mainly innervated by the 4th intercostal nerve.

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32. The nerve supply of nail bed of index finger is ?

a) Superficial br of radial nerve

b) Deep br of radial nerve

c) Median nerve

d) Ulnar nerve

Correct Answer - C
Ans. is 'c' i.e., Median nerve

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33. Boundaries of anatomical snuff box are all except

a) APL

b) EPL

c) EPB

d) ECU

Correct Answer - D

Ans. is 'd' i.e., ECU

Anatomical Snuffbox

- Triangular depression on the dorsal and radial aspect of the hand become visible when thumb is fully extended. Boundaries
- Medial/Posterior → Tendon of the extensor pollicis longus.
- Lateral/Anterior → Tendon of the extensor pollicis brevis and abductor pollicis longus.
- Roof Skin and → fascia with beginning of cephalic vein and crossed by superficial branch of the radial nerve.
- Floor → Styloid process of radius, trapezium, scaphoid and base of 1st metacarpal.
- Contents → The radial artery.

34. Which of the following muscle is not in the pectoral region ?

a) Pectoralis major

b) Infraspinatus

c) Pectoralis minor

d) Subclavius

Correct Answer - B
Ans. is 'b' i.e., Infraspinatus

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35. Which muscle originates from tendon of other muscle

a) Palmaris longus

b) FCR

c) Lumbricals

d) Adductor pollicis

Correct Answer - C
Ans. is 'c' i.e., Lumbricals

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36. Nerve running along with profunda brachii artery, in spiral groove ?

a) Ulnar

b) Median

c) Radial

d) None

Correct Answer - C

Ans. is 'c' i.e., Radial

- Profunda brachii is a branch of brachial artery.
- It accompanies radial nerve in spiral groove.

Branches of profunda brachii artery are :?

1. Deltoid branch (ascending branch) :- It anastomoses with the descending branch of posterior circumflex humeral artery.
2. Nutrient artery to humerus:
3. Muscular branches
4. Posterior descending (middle collateral) :- It anastomoses with interosseous recurrent branch of ulnar artery.
5. Anterior descending (radial collateral) :It anastomoses with radial recurrent branch of radial artery in front of lateral epicondyle.

37. All of the following muscles have dual nerve supply except ?

a) Subscapularis

b) Pectoralis major

c) Pronator teres

d) Flexor digitorum profundus

Correct Answer - C

Ans. is 'c' i.e., Pronator teres

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38. Which of the following is not the muscles of superficial anterior compartment of forearm ?

a) FDS

b) FPL

c) FCR

d) Palmaris longus

Correct Answer - B

Ans. B. FPL

Muscles of superficial anterior compartment of forearm: ECR, FDS, FCU, Pronator teres, palmaris longus

Muscles of deep anterior compartment of forearm: FDP, FPL, Pronator quadratus.

39. Contents of midpalmar space are all except

a) 2nd lumbrical

b) FDP of 3rd finger

c) 1st lumbrical

d) FDP of 4th finger

Correct Answer - C

Ans. is 'c' i.e., 1st lumbrical

Boundaries of midpalmar space are:

Anterior- Flexor tendons of 3rd, 4th, and 5th fingers

2nd, 3rd and 4th lumbricals

Palmar aponeurosis

Posterior- Fascia covering interossei and metacarpals

Lateral - Intermediate palmar septum

Medial- Medial palmar septum

1st lumbrical is present in the thenar space

40. Axillary nerve is accompanied by which artery ?

- a) Axillary
- b) Subscapular
- c) Anterior circumflex humeral
- d) Posterior circumflex humeral

Correct Answer - D

Ans. is 'd' i.e., Posterior circumflex humeral

Axillar. nerve

- Axillary nerve is a branch of the posterior cord of brachial plexus with root value C_5 and C_6 . It leaves the posterior wall of axilla along with the posterior circumflex humeral vessels through the quadrangular space. While passing through the quadrangular space it gives its first branch, an articular twig to the shoulder joint. Then it divides into?
 1. Anterior division :- Winds around the surgical neck of humerus to supply deltoid.
 2. Posterior division :- It gives of
 3. Branches to posterior part of deltoid.
 4. Nerve to teres minor which shows a pseudoganglion.
 5. Upper lateral cutaneous nerve of arm supplying the skin covering lower part of deltoid (regimental badge region).

41. Nerve supply to the muscles of flexor compartment of arm ?

a) Radial nerve

b) Median nerve

c) Musculocutaneous nerve

d) Ulnar nerve

Correct Answer - C

Ans. is 'c' i.e., Musculocutaneous nerve

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42. Muscle causing supination of forearm ?

a) Biceps brachii

b) Brachioradialis

c) FDS

d) Anconeus

Correct Answer - A

Ans. is 'a' i.e., Biceps brachii

Movement Muscles causing movement

Pronation Pronator quadratus (strong pronator), Pronator teres
(Rapid pronator).

Supination Supinator (when elbow is extended), Biceps (when
elbow is flexed)

43. 3rd extensor compartment of wrist contains tendon of ?

a) ECRL

b) ECRB

c) EPL

d) EPB

Correct Answer - C

Ans. C) EPL

- The **third compartment contains the extensor pollicis longus tendon**, which originates at the mid-ulna and inserts at the base of the first distal phalanx.
- In combination with the EPB tendon, it extends the thumb at the first carpometacarpal and first interphalangeal joints.

44. All are supplied by anterior interosseous nerve except –

a) Flexor carpi ulnaris

b) Brachioradialis

c) Abductor pollicis brevis

d) Flexor pollicis longus

e) Flexor digitorum superficialis

Correct Answer - A:B:C:E

Ans. is 'a' i.e., Flexor carpi ulnaris 'b' i.e., Brachioradialis; 'c' i.e., Abductor pollicis brevis; & 'e' i.e., Flexor digitorum superficialis

- The anterior interosseous nerve (**volar** interosseous nerve) is a branch of the **median nerve** that supplies the deep muscles on the anterior of the forearm, except the ulnar (**medial**) half of the flexor digitorum profundus.

45. Interosseous membrane of forearm is pierced by?

- a) Brachial artery
- b) Anterior interosseous artery
- c) Posterior interosseous artery
- d) Ulnar recurrent artery

Correct Answer - B

Ans. is 'b' i.e., Anterior interosseous artery

- The anterior interosseous artery is the deepest artery on the front of forearm.
- It is one of the terminal branch of common interosseous artery, which in turn is a branch of ulnar artery.
- It is accompanied by anterior interosseous nerve, a branch of median nerve.
- It descends on the surface of the interosseous membrane between the FDP and FPL.
- It pierces the interosseous membrane at the upper border of the pronator quadratus to enter the extensor (dorsal) compartment.

Branches of anterior interosseous artery are :?

1. Muscular branches : For deep muscles of front of forearm.
2. Nutrient artery to radius and ulna.
3. Median artery.

46. True statement about great sphenous vein

- a) It begins at lateral end of dorsal venous arch
- b) It runs anterior to medial malleolus
- c) It is accomponied by sural nerve
- d) Terminates into popliteal vein

Correct Answer - B

Ans is 'b' i.e., It runs anteioror to medial malleolus

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47. Neurovascular bundle of anterior compartment of leg passes between the tendons of ?

a) EHL and EDL

b) EDL and peroneus tertius

c) Tibialis anterior and EHL

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., EHL and EDL

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48. Structure passing deep to flexor retinaculum is ?

a) Post tibial artery

b) Long saphenous vein

c) Tibialis ant. tendon

d) Peroneus tertius

Correct Answer - A

Ans. is 'a' i.e., Post tibial artery

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49. Which muscles is known as 'Triceps surae'

a) Gastro-soleus

b) Popliteus

c) EHL

d) EDL

Correct Answer - A

Ans. is 'a' i.e., Gastro-soleus

- Gastrocnemius and soleus together (gastro-soleus) are known as triceps surae.
- Soleus is known as peripheral heart helping in venous return from lower limb

50. The blood supply to femoral head is mostly by ?

a) Lateral epiphyseal artery

b) Medial epiphyseal artery

c) Ligamentous teres artery

d) Profunda femoris

Correct Answer - D

Ans. is 'd' i.e., Profunda femoris

- Arterial supply of femoral head?
 1. Medial circumflex femoral artery (major supply).
 2. Lateral circumflex femoral artery.
 3. Obturator artery through artery of ligamentum teres.
 4. Intramedullary vessels in the femoral neck .
- Medial and lateral circumflex femoral arteries are branches of profunda *femoris artery* which in turn is a branch-of *femoral artery*.

51. Main blood supply to the head and neck of femur comes from

a) Lateral circumflex femoral Artery

b) Medial circumflex femoral Artery

c) Artery of Ligamentum Teres

d) Popliteal Artery

Correct Answer - B

Ans. is 'b' i.e., Medial circumflex femoral Artery

- The medial circumflex femoral artery along with its retinacular and epiphyseal branches supplies most of the blood supply to the head and neck of femur.
- Arterial supply of femoral head has been explained in details in previous sessions.

52. True about linea aspera ?

- a) Forms lateral border of femur
- b) Forms medial border of femur
- c) Continues as gluteal tuberosity
- d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Continues as gluteal tuberosity

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53. Muscle attached to lateral surface of greater trochanter -

a) Gluteus maximus

b) Gluteus medius

c) Gluteus minimus

d) Piriformis

Correct Answer - B

Ans. is 'b' i.e., Gluteus medius

Attachments of greater trochanter (GT)

All are insertions

Part of GT

Muscle inserted

Apex (tip) of GT

Piriformis

Anterior surface (lateral part)

Gluteus minimus

Lateral surface

Gluteus medius

Medial surface

Obturator internus & two gemelli

Trochanteric fossa

Obturator externus

54. Sacrotuberous ligament is pierced by

- a) Perforating cutaneous nerve
- b) Posterior femoral cutaneous
- c) Superior gluteal nerve
- d) Sciatic nerve

Correct Answer - A

Ans: A Perforating cutaneous nerve

Sacrotuberous ligament (STL) -

- Stabiliser of sacro-iliac joint.
- Connects bony pelvis to vertebral column.
- **Structure piercing via STL - Perforating cutaneous nerve.**

Perforating cutaneous nerve:

- Cutaneous nerve that arises from the 52 and 53 nerve roots of the sacral plexus.
- Supplies lower medial part of buttock.

55. The superficial external pudendal artery is a branch of ?

a) Femoral artery

b) External iliac artery

c) Internal iliac artery

d) Aorta

Correct Answer - A

Ans. is 'a' i.e., Femoral artery

Femoral artery

- It is the main artery of the lower limb. It begins as a continuation of external iliac artery below the inguinal ligament at midinguinal point midway between pubic symphysis and anterior superior iliac spine. It descends through femoral triangle and then through adductor canal. After that it ends by passing through adductor hiatus in the adductor magnus muscle to continue as popliteal artery.
- Branches of femoral artery are :?
 - A. In femoral triangle
 - 1. Superficial branches :- (i) Superficial external pudendal, (ii) Superficial epigastric, (iii) Superficial circumflex iliac.
 - 2. Deep branches :- (i) Profunda femoris, (ii) Deep external pudendal, (iii) Muscular branches.

B. In adductor canal

Descending genicular artery.

- Profunda femoris artery is the largest branch of femoral artery and supplies all three compartments of thigh (anterior, medial and posterior). It arises from the lateral side of femoral artery about 4 cm below the inguinal ligament. The profunda femoris gives off following branches :

1. Medial circumflex femoral :- Major supply to the head of femur.
2. Lateral circumflex femoral.
3. Four perforating arteries :- 2nd perforating artery gives nutrient artery to femur.

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56. Line from midinguinal point to adductor tubercle represent ?

- a) Inferior epigastric artery
- b) Femoral artery
- c) Superior epigastric artery
- d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Femoral artery

- Femoral artery enters the thigh behind the inguinal ligament at the mid-inguinal point. It is represented by the upper two-third of a line joining the mid-inguinal point to adductor tubercle.
- Femoral vein has same markings as femoral artery except that the upper point is taken 1 cm medial to mid-inguinal point and lower point 1 cm lateral to adductor tubercle.
- Inferior epigastric vessels is represented by the upper two-third of a line joining the mid-inguinal point to umbilicus.

57. Skin and fascia of great toe drains into ?

a) Superficial inguinal lymph nodes

b) External iliac nodes

c) Internal iliac nodes

d) Deep inguinal nodes

Correct Answer - A

Ans. is 'a' i.e., Superficial inguinal lymph nodes

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58. Lower end of femur is ossified from how many ossification centers :?

a) 1

b) 2

c) 3

d) 4

Correct Answer - A

Ans. is 'a' i.e., 1

There are three ossification centers in the proximal femoral end located in its head, greater and lesser trochanters, whereas there exists only one ossification center in the distal femoral end.

59. Muscle causing flexion of hip ?

a) Biceps femoris

b) Psoas major

c) Gluteus maximus

d) TFL

Correct Answer - B
Ans. is 'b' i.e., Psoas major

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60. Sacral promontory is the landmark for

- a) Origin of superior mesenteric artery
- b) Termination of presacral nerve
- c) Origin of inferior mesenteric artery
- d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Termination of presacral nerve

- At the sacral promontory level or just caudal to it, the *presacral nerves terminate* and give rise to right and left hypogastric nerves, which will join the inferior hypogastric plexus at the level of S2-S3-S4.

61. Esophagus is present in all except ?

a) Superior mediastinum

b) Middle mediastinum

c) Anterior mediastinum

d) Posterior mediastinum

Correct Answer - C

Ans. is 'c' i.e., Anterior mediastinum

- Esophagus mainly descends in superior and posterior mediastinum.
- Esophagus is usually not a content of middle mediastinum, but it forms posterior boundry of middle mediastinum (*BDC Vol.-1, 6th e p. 246*).
- Esophagus has no relation to anterior mediastinum. Thus, among the given options, best answer is anterior mediastinum.

62. Esophagus is present in which mediastinum ?

a) Anterior

b) Posterior

c) Middle

d) None

Correct Answer - B
Ans. is 'b' i.e., Posterior

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63.

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Which of the following is related to mediastinal part of right lung ?

a) Arch of aorta

b) SVC

c) Pulmonary trunk

d) Left ventricle

Correct Answer - B
Ans. is "b." i.e., SVC

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64. Posterior surface of heart is formed by -

a) RA

b) LA

c) LV

d) RV

Correct Answer - B

Ans. is 'b>a' i.e., LA>RA

Surfaces of the heart

1. Anterior (sternocostal) surface :- Formed mostly by right ventricle (major) and right auricle and partly by left ventricle and left auricle.
2. Inferior (diaphragmatic) surface :- It is formed by left ventricle (left 2/3) and right ventricle (right 1/3). It is traversed by posterior interventricular groove (PIV) containing PIV branch of RCA.
3. Base (posterior surface) :- Formed mainly by left atrium and partly by right atrium. It is separated from T₅ to T₁₀ vertebrae by pericardium, oblique pericardial sinus, esophagus and descending thoracic aorta.
4. Right surface :- Mainly by right atrium.
5. Left surface :- Mainly by left ventricle and partly by left auricle.

65.

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Anterosuperior sternal part of heart is made up of ?

a) Right atrium and auricle

b) Left atrium.

c) Left ventricle

d) Right ventricle

Correct Answer - D
Ans. is 'd' i.e., Right ventricle

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66. Posterior to sternum is ?

a) Left atrium

b) Left ventricle

c) Right atrium

d) Right ventricle

Correct Answer - D

Ans. is 'd' i.e., Right ventricle

- Normally, most of the anterior portion of right ventricle is in contact with sternum.
- It is for this reason that sternal and parasternal injury commonly results in right ventricular injury.

67. Not true about right bronchus

a) Shorter

b) Wider

c) More horizontal

d) In the line of trachea

Correct Answer - C

Ans. is 'c' i.e., More horizontal

- Trachea bifurcates at Carina (at lower border of T4 vertebra at T₄-T₅ disc space) into *right and left principal (primary) bronchi*.
- Right principal bronchus is wider, shorter (2.5 cm long), and more vertical in the line of trachea (25° with median plane).
- Therefore a foreign body is most likely to lodge in the right bronchus.
- Right bronchus divides into epiarterial and hyparterial bronchi, passing respectively above and below the pulmonary artery, before entering the hilum.
- Left principal bronchus is narrower, longer (5 cm long) and more horizontal (45° with median plane).
- Left bronchus crosses in front of the esophagus producing a slight constriction.
- Inside the lung it divides into 2 lobar bronchi: upper and lower.

68. Thoracic duct does not drains ?

a) Right upper part of body

b) Left upper part of body

c) Right lower part of body

d) Left lower part of body

Correct Answer - A

Ans. is 'a' i.e., Right upper part of body

Thoracic duct

- Thoracic duct is also called as Pecquet duct.
- It is the *largest lymphatic duct* in body, about 45 cm (18 inches) long.
- It has a *beaded appearance* because of the presence of many valves in its lumen.
- Thoracic duct begins as a continuation of the upper end of the cisterna chyli near the lower border of **T₁₂** vertebra and enters the thorax through the aortic opening of diaphragm (at T₁₂).
- It then ascends through the posterior mediastinum and at **T₅** level crosses from right side to the left side and ascends along left margin of oesophagus to enter the neck.
- At the level of **C₇** vertebrae, arches towards left side to open into left brachiocephalic vein at the angle of union of left subclavian and left internal jugular veins.
- *Thoracic duct receives lymph from both halves of the body below the diaphragm and the left half above the diaphragm.*

Its tributaries are :-

1. Right and left lumbar trunk.
2. In thorax :- Posterior mediastinal nodes, small intercostal lymph nodes.
3. In Neck :- Left jugular trunk, left subclavian trunk and left

bronchomediastinal trunk.

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69. Upper two posterior intercostal arteries arise from ?

- a) Aorta
- b) Superior intercostal artery
- c) Internal mammary artery
- d) Bronchial artery

Correct Answer - B

Ans. B) Superior intercostal artery

- The 1st and 2nd **posterior intercostal arteries** arise from the supreme **intercostal artery**, a branch of the costocervical trunk of the subclavian **artery**.
- The lower nine **arteries** are the aortic**intercostals**, so called because they **arise** from the back of the thoracic aorta.

70. True about anterior intercostal artery ?

- a) Present in 1st to 11th intercostal space
- b) Each intercostal space has two anterior intercostal arteries
- c) Branch of internal thoracic artery
- d) Branch of aorta

Correct Answer - C

Ans. is 'c' i.e., Branch of internal thoracic artery

- Each of upper nine intercostal spaces (1 to 9) have one posterior and two anterior intercostal arteries. The 10th and 11th spaces have one posterior intercostal artery (no anterior intercostal artery)
- Posterior intercostal artery is the main artery of intercostal space and runs in the costal groove along the upper border of an intercostal space, lying between posterior intercostal vein and intercostal nerve (relationship from above downward VAN). 1st and 2nd posterior intercostal arteries are branches of superior intercostal artery (a branch of costocervical trunk from 2nd part of subclavian artery*⁰⁵). Lower nine (3rd to 11th) posterior intercostal arteries are branches of descending thoracic aorta. Right posterior intercostal arteries are longer than the left.
- Anterior intercostal arteries for upper six spaces (two in each space) arise from internal thoracic or internal mammary artery. For 7th to 9th spaces, these are branches of musculophrenic artery (terminal branch of internal thoracic artery).

71. Carina is situated at which level ?

a) T₃

b) T₄

c) T₆

d) T₉

Correct Answer - A

Ans. is '13' i.e., T₄

Trachea bifurcates at carina, at the level of lower border of T₄ or T₄-T₅ disc space.

Structure

Cervico thoracic level

Tracheal bifurcation

T4-T5

Arch of aorta

Begins and ends at T4

Xiphoid process

T9

Splenic axis

Along 10th rib

Carotid bifurcation, Hyoid bone

C3

Upper border of thyroid cartilage

C4

Level of cricoids cartilage

C6

Lumbar level

Celiac trunk

T12 - L1

Superior mesenteric artery

L1

Transpyloric plane

Lower border of L1

72. Which lymph nodes drain upper vagina & cervix?

- a) Para aortic
- b) External iliac
- c) Superior inguinal
- d) Deep inguinal

Correct Answer - B

Ans. is 'b' i.e., External iliac

- The lymphatics from the cervix drain into the external iliac, internal iliac and sacral nodes.
- Lymphatic Drainage of uterus:
- Fundus and upper body - aortic nodes and superficial inguinal nodes
- Lower body - external iliac nodes
- Cervix - external iliac, internal iliac and sacral nodes.
- Lymphatic drainage of Vagina:
- Upper 1/3 - external iliac nodes
- Middle 1/3 - internal iliac nodes
- Lower 1/3- superficial inguinal nodes

73.

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A surgeon removes a part of liver to left of falciparum ligament, which segment of liver is removed ?

a) 1 & 4

b) 2 & 3

c) 1 & 4

d) 1 & 3

Correct Answer - B
Ans. is 'b' i.e., 2 & 3

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74. Caudate lobe of liver is ?

a) I

b) III

c) IV

d) VI

Correct Answer - A

Ans. is 'a' i.e., I

The caudate lobe (posterior hepatic segment I, Spigelian lobe) is situated upon the postero-superior surface of the liver on the right lobe of the liver, opposite the tenth and eleventh thoracic vertebrae.

75. Location of testis is higher on ?

a) Right side

b) Left side

c) May be on right or left side

d) Same level on both sides

Correct Answer - A

Ans. A

Right

Right testis is located at a higher position than left .

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76. Support of prostate is ?

- a) Pubococcygeus
- b) Ischiococcygeus
- c) Iliococcygeus
- d) None of the above

Correct Answer - A

Ans. is 'a' i.e., Pubococcygeus

- Levator ani muscle is divisible into following parts :1) Pubococcygeus part
- Anterior fibers of this part closely surround the prostate, in males, to form, levator prostatae. In the female these fibres surround the vagina and form sphincter vaginae. In both cases these anterior fibres are inserted into the perineal body.
- Middle fibers constitute the puborectalis. They partly form a loop or sling around the anorectal junction; and are partly continuous with longitudinal muscle coat of the rectum.
- Posterior fibers are attached to anococcygeal ligament and tip of coccyx.
- Iliococcygeus part
- This is inserted to anococcygeal ligament and last two pieces of coccyx.
- Ischiococcygeus part (or coccygeus)
- It forms posterior part of pelvic floor.

77. In case of aberrant obturator artery, it arises most commonly from ?

- a) Common iliac artery
- b) Femoral artery
- c) Profunda femoris artery
- d) Inferior epigastric artery

Correct Answer - D

Ans. D. Inferior epigastric artery

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78. Internal spermatic fascia is derived from ?

a) External oblique muscle

b) Internal oblique muscle

c) Fascia transversalis

d) Colle's fascia

Correct Answer - C

Ans. is 'c' i.e., Fascia transversalis

Layers of the scrotum

- The scrotum is made up of the following layers from outside inwards.
 1. Skin, continuation of abdominal skin.
 2. Dartos muscle which replaces the superficial fascia. The dartos muscle is prolonged into a median vertical septum between the two halves of the scrotum.
 3. The external spermatic fascia from external oblique muscle.
 4. The cremasteric muscle and fascia from internal oblique muscle.
 5. The internal spermatic fascia from fascia transversalis

79. Portal vein supplies ?

a) Spleen

b) Liver

c) Pancreas

d) Colon

Correct Answer - B

Ans. is 'b' i.e., Liver

- Portal vein is a vein, still it supply blood to liver (usually a vein drains blood from an organ or tissue).

The liver has dual blood supply :-

- 20% of blood supply is through the hepatic artery.
- 80% of blood supply is through the portal vein.

80. Ratio of connective tissue : smooth muscle in cervix is ?

a) 2:1

b) 5:1

c) 8:1

d) None

Correct Answer - C

Ans. is 'c' i.e., 8:1

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81. Helicine artery are branch of ?

- a) Deep artery of penis
- b) Femoral artery
- c) External pudendal artery
- d) None of the above

Correct Answer - A

Ans. is 'a' i.e., Deep artery of penis

- Helicine arteries of penis are five branches of cavernosal artery (deep artery of penis) that fill sinusoidal space of corpora cavernosa.
- Helicine arteries of uterus are extremely tortuous terminal branches of uterine artery supplying uterine muscle.

82.

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Most dependent part of abdomen in standing position is ?

a) Vesicouterine pouch

b) Pouch of Douglas

c) Rectouterine pouch

d) b & c

Correct Answer - D

Ans. is 'd' i.e., b & c

- In males, rectovesicle pouch of peritoneum intervenes between rectum and urinary bladder.
- Obliterated part of rectovesical pouch is called fascia of Denonviller's which separates posterior surface of prostate from rectum.
- In females rectouterine pouch (pouch of Douglas) lies between rectum (posteriorly) and uterus and posterior fornix of vagina (anteriorly).
- In females vesicouterine pouch lies between urinary bladder (anteriorly) and uterus posteriorly.
- The rectovesical pouch (in males) and rectouterine pouch (in females) are the most dependent portions of peritoneal cavity in erect posture

83. Pelvic pain is mediated by ?

- a) Pudendal nerve
- b) Sciatic nerve
- c) Autonomic nerves
- d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Autonomic nerves

- Visceral afferent fibers of pelvis travel with autonomic nerve fibers.
- Visceral afferent fibers conducting reflexive sensations (information that does not reach consciousness) travel with parasympathetic fibers to spinal sensory ganglia of S₂- S₄.
- The route taken by visceral afferent fibers conducting pain sensation differs in relation to an imaginary line, the pelvic pain line, that corresponds to the inferior limit of peritoneum, except in case of large intestine, where pain line occurs midway along length of sigmoid colon.
- Visceral afferent fibers that transmit pain sensations from the viscera inferior to pelvic pain line travel in parasympathetic fibers of the spinal ganglia S₂ - S₄ (via pelvic splanchnic nerve or nerve erigentes).
- Visceral afferent fiber conducting pain from the viscera superior to pelvic pain line follow the sympathetic fibers reterogradely to inferior thoracic and superior lumbar (T₁ - L_{1 0,2}) spinal ganglia.

84. Cochleate uterus is ?

a) Large uterus

b) Acute anteflexion

c) Acute retroflexion

d) Large cervix

Correct Answer - B

Ans. is 'b' i.e., Acute anteflexion

- Cochleate uterus is *acutely anteflexed uterus* with pin hole os.
- It is a small adult uterus with a conical cervix and a body that is small, globular and acutely flexed.
- It can cause primary dysmenorrhea.

85. Length of anal canal

a) 10 - 15 mm

b) 15 - 20 mm

c) 25 - 30 mm

d) 35 - 40 mm

Correct Answer - D

Ans. is 'd' i.e., 35 - 40 mm

- The anal canal is the terminal part of the alimentary canal.
- It begins at ano-rectal junction which is situated 2-3 cm in front and slightly below the tip of coccyx. From ano-rectal junction anal canal passes downwards and backwards through the pelvic diaphragm and opens at anal orifice (anus) which is situated in the cleft between the buttocks about 4 cm below and in front of the tip of coccyx.
- *Sacculations and taeniae are absent in anal canal.* The length of anal canal is 3.8 cm.

86. Most common congenital anomaly of kidney

- a) Ectopic kidney
- b) Renal duplication
- c) Horse shoe kidney
- d) Renal agenesis

Correct Answer - C

Ans. is 'c' i.e., Horse shoe kidney

- Horse shoe kidney is the most common congenital renal anomaly, with an incidence of 1 in 400 live births.
- Fusion typically occurs at lower poles, with subsequent arrest of ascend of kidney, due to restriction at the inferior mesenteric artery.
- As a result, kidneys are lower in abdomen.

87. Superior wall of middle ear is formed by ?

a) Tympanic membrane

b) Jugular bulb

c) Tegmen tympani

d) None

Correct Answer - C

Ans. is 'c' i.e., Tegmen tympani

- Roof (superior wall) of middle ear is formed by tegmen tympani.

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88. Nerve supply of larynx above level of vocal cord

a) Superior laryngeal

b) Recurrent laryngeal

c) Glossopharyngeal

d) External laryngeal

Correct Answer - A

Ans. is 'a' i.e., Superior laryngeal

Nerve supply of larynx

- The main cranial nerve innervating the larynx is the vagus nerve via its branches; superior laryngeal nerve (SLN) and recurrent laryngeal nerve (RLN).
- Sensory supply of larynx
- Above the level of vocal cords, larynx is supplied by internal laryngeal nerve, a branch of superior laryngeal nerve.
- Below the vocal cord, larynx is supplied by recurrent laryngeal nerve.
- Motor supply of larynx
- All the intrinsic muscles of larynx are supplied by recurrent laryngeal nerve except for cricothyroid muscle.
- Cricothyroid is supplied by external laryngeal nerve, a branch of superior laryngeal nerve.

89. Which muscle of larynx is not supplied by recurrent laryngeal nerve ?

a) Vocalis

b) Thyroarytenoid

c) Cricothyroid

d) Interarytenoid

Correct Answer - C

Ans. is 'c' i.e., Cricothyroid

- All intrinsic muscles are supplied by the recurrent laryngeal nerve except cricothyroid which is supplied by the external laryngeal nerve

90. Which muscle plays a role in winking

a) Levator labi superioris

b) Orbicularis oculi

c) Corrugator supercilli

d) Levator palpebrae

Correct Answer - B

Ans. is 'b' i.e., Orbicularis oculi

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91. Galen's anastomosis is between ?

- a) Recurrent laryngeal nerve and external laryngeal nerve
- b) Recurrent laryngeal nerve and internal laryngeal nerve
- c) Internal laryngeal nerve and external laryngeal nerve
- d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Recurrent laryngeal nerve and internal laryngeal nerve

There are two types of important anastomosis between laryngeal branches of vagus :?

1. Galen anastomosis (Ramus anastomoticus or Ansa of Galen)
 - This is an anastomosis between the *recurrent laryngeal nerve and internal laryngeal nerve (internal branch of superior laryngeal nerve)*.
 - Generally, posterior branch of recurrent laryngeal nerve contributes to the anastomosis; however, anterior branch can also contribute.
2. Human communicating nerve
 - It is an anastomosis between *recurrent laryngeal nerve (distal part) and external laryngeal nerve (external branch of superior laryngeal nerve)*.

92. All pass through jugular foramen except

a) Emissary vein

b) Vagus nerve

c) Mandibular nerve

d) Internal jugular vein

Correct Answer - C

Ans. is 'c' i.e., Mandibular nerve

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93. All are contents of occipital triangle except ?

a) Great auricular nerve

b) Suprascapular nerve

c) Lesser occipital nerve

d) Occipital artery

Correct Answer - B

Ans. is 'b' i.e., Suprascapular nerve

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94. The roof of the olfactory region is formed by ?

a) Nasal bone

b) Cribriform plate of ethmoid

c) Sphenoid

d) Temporal bone

Correct Answer - B

Ans. is 'b' i.e., Cribriform plate of ethmoid

- The olfactory mucosa lines the upper one-third of nasal cavity including the roof formed by cribriform plate and the medial and lateral walls up to the level of superior concha (turbinate).

95.

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Chorda tympani is a part of ?

- a) Middle ear
- b) Inner ear
- c) External auditory canal
- d) None of the above

Correct Answer - A

Ans. is 'a' i.e., Middle ear

Contents of middle ear

- *Contents of middle ear (tympanic cavity) are :?*
 1. Ear ossicles Malleus, incus, stapes
 2. Muscles → Tensor tympani, stapedius
 3. Chorda tympani
 4. Tympanic plexus

96. Stapedius nerve is a branch of ?

a) Trigeminal nerve

b) Facial nerve

c) Vagus nerve

d) None

Correct Answer - B

Ans. is 'b' i.e., Facial nerve

Branches of facial nerve

1. In fallopian (facial canal) :- Greater petrosal (greater superficial petrosal) nerve, nerve to stapedius, chorda tympani.
2. At its exit from stylomastoid foramen :- Posterior auricular, digastric nerve, stylohyoid nerve.
3. Terminal branches :- Temporal, zygomatic, buccal, marginal mandibular, and cervical.

97. Deep injury of neck always involves

a) Platysma

b) Tropezius

c) Sternocleidomastoid

d) Longus colli

Correct Answer - A

Ans. is 'a' i.e., Platysma

The neck is invested by two major fascial layers :?

- 1. Superficial fascia : Platysma and its investing fascia.
- 2. Deep fascia : Invests the deeper muscles, the thoracic duct, blood vessels, nerves, glands, trachea and oesophagus.
- Significant injury to deep structures of the neck is unlikely without penetration of the platysma.
- Therefore, a stab wound that does not penetrate the platysma needs no further evaluation.

98. Lacrimal punctum of upper and lower eyelids are?

- a) They are opposed
- b) No relation
- c) Upper punctum is medial
- d) Upper punctum is lateral

Correct Answer - A
Ans. is 'a' i.e., They are opposed

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99. Protrusion of tongue not possible in damage of ?

a) Styloglossus

b) Hyoglossus

c) Palatoglossus

d) Genioglossus

Correct Answer - D
Ans. is 'd i.e., Genioglossus

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100. Terminal branches of internal carotid artery are all except ?

- a) Anterior cerebral artery
- b) Middle cerebral artery
- c) Posterior communicating artery
- d) Cavernous artery

Correct Answer - D

Ans. is 'd > c' i.e., Cavernous artery > Posterior communicating artery

This question has not been framed properly.

- Internal carotid artery has two terminal branches, i.e. ICA ends by dividing into :?

.. Anterior cerebral artery

2. Middle cerebral artery (larger terminal branch)

I think, examiner wants to know the branches of terminal/cerebral part of ICA (not terminal branches). In that case answer is option 'd', as cavernous branch arises from cavernous part.

Internal carotid artery

- It is the main artery supplying structures inside the cranial cavity and orbit. It is divided into 4 parts :?
- .. Cervical part :- It extends from upper border of thyroid cartilage to the base of skull. This part gives no branch.
- 2. Petrous part :- It lies in bony carotid canal in the petrous temporal bone. It gives two branches (i) Caroticotympanic, and (ii) pterygoid.
- 3. Cavernous part :- It runs through the medial wall of cavernous sinus. It gives three branches : (i) Meningeal branch, (ii) hypophyseal branch and (iii) cavernous branch.
- 4. Cerebral part :- It is related to inferior surface of cerebrum. It gives

following branches: (i) Ophthalmic artery, (ii) posterior communicating artery, (iii) anterior choroidal artery, (iv) anterior cerebral artery and (v) middle cerebral artery.

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101. Number of muscles in middle ear -

a) 1

b) 2

c) 3

d) 4

Correct Answer - B

Ans. is 'b' i.e., 2

Tensor tympani and Stapedius are the two muscles in middle ear. They both work to dampen the intensity of high pitched sound waves and thus protect inner ear.

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102. Not true about facial vein is ?

- a) Drains in EJV
- b) Largest vein of face
- c) Formed from angular vein
- d) Has no valves

Correct Answer - A

Ans. is 'a' i.e., Drains in EJV

- The facial vein is the largest vein of the face with no valves.
- It begins as the angular vein at the medial angle of the eye.
- Angular vein is formed by the *union of supraorbital and supratrochlear veins*.
- The angular vein continues as facial veins.
- Which joins the anterior division of retromandibular vein (i.e. deep facial vein) below the angle of the mandible to form common facial vein.
- Common facial vein drains into the internal jugular vein.

103. Structure passing through superior orbital fissure?

a) Oculomotor nerve

b) Trochlear nerve

c) Superior ophthalmic vein

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Structures passing through superior orbital fissure are :-

1. Middle part (within the ring) Upper and lower division of oculomotor nerve, nasociliary nerve, abducent nerve.
2. Lateral part (above the ring) :- Trochlear nerve, frontal nerve and lacrimal nerve, superior ophthalmic vein, recurrent menigeal branch of lacrimal artery, orbital branch of middle meningeal artery and sometimes meningeal branch of ophthalmic artery.
3. Medial part (below the ring) :- Inferior ophthalmic vein, sympathetic nerves around ICA.

104. Chief artery of lateral surface of cerebral hemisphere ?

- a) Anterior cerebral artery
- b) Posterior cerebral artery
- c) Middle cerebral artery
- d) Posterior inferior cerebellar artery

Correct Answer - C

Ans. C. Middle cerebral artery

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105. Vertebral arteries of both sides unite to form

- a) Anterior spinal artery
- b) Posterior spinal artery
- c) Medullary artery
- d) Basilar artery

Correct Answer - D

Ans. is 'd' i.e., Basilar artery

Vertebral Artery

- It arises from 1st part of subclavian artery
- First Part : Origin to the foramen transversarium of C6 vertebra. It lies in the *scalenovertbral/vertebral triangle (triangle of vertebral artery) between scalemus anterior and longus colli muscles.*
- Second Part : This part passes through foramina transversaria of upper 6 cervical vertebrae (C₆ to C1).
- Third Part : It extends from foramen transversarium of C_i to foramen magnum, lying in a groove on the upper surface of posterior arch of atlas. This part of the artery lies in the *suboccipital triangle*. It then enters the vertebral canal by passing deep to the lower arched margin of posterior atlanto-occipital membrane.
- Fourth Part : It lies in the posterior cranial fossa extending from the foramen magnum to the lower border of pons.
- In the vertebral canal, it pierces the dura and arachnid and ascends in front of hypoglossal nerve roots. At the lower border of pons both vertebral arteries unite to form the basilar artery.

Cervical branches

- .. Spinal branches : Enter vertebral canal through intervertebral

foramina and supply cervical segments of spinal cord, meninges, and vertebrae.

2. Muscular branches : Supply suboccipital muscles.

Cranial Branches :

- .. Meningeal : Supply meninges of posterior cranial fossa
2. Posterior spinal
3. Anterior spinal
4. Medullary
5. Posterior inferior cerebellar
- Basilar artery : A single median vessel formed by the union of the two vertebral arteries at the lower border of pons, runs upward in front of the pons, embedded in the groove, to bifurcate into two posterior cerebral arteries at the upper border of pons. Its branches are :
 - .. Labyrinthine
 2. anterior inferior cerebellar
 3. Pontine
 4. Superior cerebellar
 5. Posterior cerebral

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106. Tributaries of cavernous sinus are all except ?

- a) Inferior cerebral vein
- b) Central vein of retina
- c) Sphenoparietal sinus
- d) Superior cerebral vein

Correct Answer - D

Ans. is 'd' i.e., Superior cerebral vein

Tributaries (incoming channels) of cavernous sinus

- 1. Superior ophthalmic vein
- 2. A branch of inferior ophthalmic vein or sometimes vein itself
- 3. Central vein of retina (it may also drain into superior ophthalmic vein)
- 4. Superficial middle cerebral vein
- 5. Inferior cerebral vein
- 6. Sphenoparietal sinus
- 7. Frontal trunk of middle meningeal vein (it may also drain into pterygoid plexus or into sphenoparietal sinus)

Draining channels (communications) of cavernous sinus

- 1. Into transverse sinus through superior petrosal sinus
- 2. Into internal jugular vein through inferior petrosal sinus and through a plexus around the ICA
- 3. Into pterygoid plexus of veins through emissary veins
- 4. Into facial vein through superior ophthalmic vein
- 5. Right and left cavernous sinus communicates with each other by anterior and posterior intercavernous sinuses and through basilar plexus of veins

107. Pineal gland forms ?

- a) Floor of third ventricle
- b) Anterior wall of third ventricle
- c) Posterior wall of third ventricle
- d) Roof of third ventricle

Correct Answer - C

Ans. is 'c' i.e., Posterior wall of third ventricle

Boundries of third ventricle are :-

1. Anterior wall : Lamina terminal, anterior commissure, anterior columns of fornix.
2. Posterior wall : Pineal body, posterior commissure, cerebral aqueduct.
3. Roof : Ependyma lining of under surface of tela choroidea of ventricle. The choroid plexus of third ventricle projects downwards from roof.
4. Floor : Optic chiasma, tuber cinereum, infundibulum (pituitary stalk), mammillary body, posterior perforated substance and tegmentum of midbrain. Optic recess is seen at the junction of floor with anterior wall.
5. Lateral wall : Medial surface of thalamus, hypothalamus and hypothalamic nuclei. Interventricular foramen (of Monroe) is seen at the junction of roof with anterior and lateral wall.

108. Which thalamic nuclei connects with neocortex?

a) Pulvinar

b) Intralaminar

c) Anterior

d) All

Correct Answer - D

Ans. is 'd' i.e., All

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109. Medulla oblongata arises from ?

a) Prosencephalon

b) Rhombencephalon

c) Mesencephalon

d) None

Correct Answer - B

Ans. 'B' i.e., Rhombencephalon

Medulla oblongata develops from caudal myelencephalon part of the rhombencephalic vesicle.

Neuroblasts from the alar plate of the neural tube at this level will produce the sensory nuclei of the medulla.

The basal plate neuroblasts will give rise to motor nuclei.

110. Glomus cells are found in -

a) Bladder

b) Brain

c) Chemoreceptors

d) Kidney

Correct Answer - C

Ans. is 'c' i.e., Chemoreceptors

- Arterial chemoreceptors consist of globular aggregations of chemoreceptive cells (glomus cells), and supportive cells, separated from one another by fibrous tissue septa.
- In these setpa and between glomus cells, numerous capillaries and nerve fibers are seen.
- The glomus cells have the structure of endocrine amine hormone secreting cells.

111. Guardian angel against obesity name given to?

a) Adiponectin

b) Fibronectin

c) HDL

d) Insulin

Correct Answer - A

Ans. A. Adiponectin

Adiponectin, which has been called a "fat burning molecule" and the guardian angel against obesity, directs fatty acids to muscle for their oxidation".

112. What is the minimum fluid urine output for neutral solute balance?

a) 300 ml

b) 400 ml

c) 500 ml

d) 750 ml

Correct Answer - C

Ans. C. 500 ml

Normally, 180 L of fluid is filtered through the glomeruli, while the average daily urine volume is about 1L with a urine concentration of 290 mOsm/L.

The same load of solute can be excreted per day in a urine volume of 500 ml when the urine is maximally concentrated i.e, 1400 mOsm/L; or in a volume of 23.3 L when the urine is maximally dilute, i.e., 30-50 mOsm/L.

113. Fever increase water losses by mUday per degree Celsius

a) 100

b) 200

c) 400

d) 800

Correct Answer - B

Ans. is 'b' i.e., 200 ml/day per degree Celsius

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114. Type 3 respiratory failure occurs due to ?

a) Post-operative atelectasis

b) Kyphoscoliosis

c) Flail chest

d) Pulmonary fibrosis

Correct Answer - A

Ans. is 'a' i.e., Post-operative atelectasis

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115. True about obesity

- a) Seen mostly in females
- b) Prevalence decrease upto 40 years of age
- c) No genetic predisposition
- d) Smoking is a risk factor

Correct Answer - D

Ans. is 'd' i.e., Smoking is a risk factor

Cessation of smoking

- Weight gain is very common when people stop smoking.
- *This is thought to be mediated at least in part by nicotine withdrawal, which is associated with increased food intake and reduced energy expenditure.*
- *Weight gain of 1 to 2 kg in the first two weeks is often followed by an additional 2 to 3 kg weight gain over the next four to five months.*
- *The average weight gain is 4 to 5 kg but can be much greater.*
- *Obesity is common in both men and women (more common in women).*

Etiologic Classification of Obesity

- Iatrogenic causes
- Drugs that cause weight gain
- Hypothalamic surgery

Dietary obesity

- Infant feeding practices
- Progressive hyperplastic obesity
- Frequency of eating
- High fat diets
- Overeating

Neuroendocrine obesities

- Hypothalamic obesity
- Seasonal affective disorder
- Cushing's syndrome
- Polycystic ovary syndrome
- Hypogonadism
- Growth hormone deficiency
- Pseudohypoparathyroidism

Social and behavioral factors

- Socioeconomic status
- Ethnicity
- Psychological factors
- Restrained eaters
- Night eating syndrome
- Binge-eating

Sedentary lifestyle

- Enforced inactivity (post-operative)
- Aging

Genetic (dysmorphic) obesities

- Autosomal recessive traits
- Autosomal dominant traits
- X-linked traits
- Chromosomal abnormalities

Other

- Low birth weight

116. True about breathing are all except ?

- a) Normal breathing occurs when transpulmonary pressure is 8-5 cm H₂O
- b) Compliance depends only on surfactant
- c) Expiration during quiet breathing is passive
- d) Inspiration is an active process

Correct Answer - B

Ans. B. Compliance depends only on surfactant

Compliance of lungs depends on:-

- 1. Elastic forces of lung tissue (one-third).
- 2. Elastic forces caused by alveolar surface tension.
- There are two forces oppose distensibility of lung and therefore decrease lung compliance.
- Surfactant, by decreasing the alveolar surface tension increases lung compliance.

117. Normal vital capacity in an adult is -

a) 1200 ml

b) 2500 ml

c) 3000 ml

d) 4700 ml

Correct Answer - D

Ans. D. 4700 ml

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118. Boyle's Law states that ?

a) $P/T = \text{constant}$

b) $PV = \text{constant}$

c) $PV = nRT$

d) $V/T = \text{constant}$

Correct Answer - B

Ans. B. $PV = \text{constant}$

Boyle's law

- At a constant temperature, the pressure (P) of a given mass is inversely proportionate to its volume (p directly proportional to $1/v$), i.e., PV constant.

119. Air remaining in lung after normal expiration ?

a) TV

b) RV

c) FRC

d) VC

Correct Answer - C

Ans, C. FRC

Functional residual capacity (FRC) is the amount of air remaining in the lungs after a normal tidal expiration.

120. Maximum voluntary ventilation is -

a) 25 L/min

b) 50 L/min

c) 100 L/min

d) 150 L/min

Correct Answer - D

Ans. D. 150 L/min

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121. Physiological dead space is calculated by ?

a) Boyle's law

b) Dalton's law

c) Bohr equation

d) Charle's law

Correct Answer - C

Ans. C. Bohr equation

Anatomical dead space-> measured by single-breath N₂ method.

Physiological (total) dead space > measured by Bohr equation.

122. Central Chemoreceptors are most sensitive to following changes in blood:

a) $\uparrow$ PCO₂

b) $\downarrow$ PCO₂

c) $\uparrow$ H⁺

d) $\downarrow$ PO₂

Correct Answer - A
 $\uparrow$ PCO₂

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123. Hypoxic pulmonary vasoconstriction due to -

- a) Irreversible pulmonary vasoconstriction hypoxia
- b) Reversible pulmonary vasoconstriction due to hypoxia
- c) Direct blood to poorly ventilated areas
- d) Occurs hours after pulmonary vasoconstriction

Correct Answer - B

Answer- b. Reversible pulmonary vasoconstriction due to hypoxia

- Hypoxic pulmonary vasoconstriction (HPV) is an adaptive vasomotor response to alveolar hypoxia which redistributes blood to optimally ventilated lung segments by an active process of 'vasoconstriction, particularly involving the small muscular resistance pulmonary arteries (PA).

124. Depressor reflex, Bezold-Jarisch reflex, produced by the following stimulus:

- a) Atrial overload
- b) Myocardial infarction
- c) Ventricular distension
- d) Isotonic exercise

Correct Answer - C

*Ventricular distension can produce a powerful depressor reflex called the **Bezold-Jarisch reflex**; vagal afferents of this cardiopulmonary reflex are also activated by chemical stimulation (eg, prostanoids, cytokines, serotonin, and classically, Veratrum alkaloids). The central connections for this reflex are in the nucleus tractus solitarius, which has both sympathetic and parasympathetic synapses.*

Ref: Hoit B.D., Walsh R.A. (2011). Chapter 5. Normal Physiology of the Cardiovascular System. In V. Fuster, R.A. Walsh, R.A. Harrington (Eds), *Hurst's The Heart*, 13e.

125. Hormone responsible for BP regulation after a fall due to blood loss.

a) ADH

b) ANP

c) Epinephrine

d) Aldosterone

Correct Answer - A

Ans. is 'a' i.e., ADH

(principles of medical physiology p. 573)

- Blood pressure is regulated by following mechanisms.

Short term regulation

- These mechanisms act immediately and correct the blood pressure quickly.

These are :-

1. Baroreceptor reflex: Works during Bp range 70-150 mmHg
2. Chemoreceptor reflex - Works when Bp below 80 mmHg.
3. CNS ischemic response : This the only hope of survival when BP is below 40 mmHg.

Hormonal release : These are -

1. Antidiuretic hormone (ADH) : Increases water reabsorption in kidney.
2. Angiotensin II: Causes vasoconstriction.

126. BP is less than 40 mm Hg. Which mechanism of regulation is working ?

a) Chemoreceptor reflex

b) Baroreceptor reflex

c) CNS ischemic reflex

d) None of the above

Correct Answer - C

Ans, C, CNS ischemic reflex

Chemoreceptor reflex is useful in regulation of BP when it falls to level between 40-70 mm Hg.

But if BP is below 40 mm Hg, the last ray of hope for survival is the Central Nervous System (CNS) Ischemic response.

CNS ischemic response is evoked by ischemia of CNS.

127. Capacitance vessels have in their wall ?

- a) More elastic tissue and less muscle
- b) Less elastic tissue and more muscle
- c) More elastic tissue and more muscle
- d) Less elastic tissue and less muscle

Correct Answer - D

Ans. is 'd' i.e., Less elastic tissue and less muscle

Veins are capacitance vessels. They have less smooth muscle and less elastic tissue in their wall.

Structure of vessels

A) Structure of artery

It is made up three layers -

1. Tunica Intima

The inner most layer (towards lumen) of artery is intima.

It consists of endothelial cells which rest on basement membrane.

There is some subendothelial connective tissue.

Intima is separated from media by internal elastic lamina.

2. Tunica Media

It mainly contains *smooth muscles* and laminae of elastic tissue

Media is separated from adventitia by external elastic lamina.

3. Tunica Adventitia

It is the *outer most layer*.

Contains collagen and elastic fibers.

B) Structure of capillaries

Capillaries are thin walled vessels made up of single layer of endothelial cells with its basement membrane. o Capillaries are of three types -

1. Continuous capillaries -

These capillaries have continuous lining of endothelial cells with no

These capillaries has continuous lining of endothelial cells with no fenestration.

Basement membrane is also continuous.

2. Fenesterated capillaries

There are fenestration between the endothelial cells.

Basment membrane is continuous.

3. Sinusoidal capillaries

Both endothelial cells and basement membrane have fenestration.

In resting tissues, most of the capillaries are collapsed and blood flows through the throughfare vessels from the arterioles to the venules.

C) Structure of veins

Structure of vein is smiliar to artery except that -

1. Wall is thinner

2. Three tunicae are less well demarcated.

3. Elastic tissue is scanty and not clearly organized into distinct internal and external elastic lamina.

4. Have valves (except venae cavae and common iliac vein).

128. Deoxygenated blood is not seen in ?

a) Pulmonary artery

b) Pulmonary vein

c) Right atrium

d) Umbilical artery

Correct Answer - C

Ans, C. Right atrium

Pulmonary veins carry oxygenated blood from the lungs to the left side of heart (left atrium).

Pulmonary artery carries deoxygenated blood from right side of heart (right ventricle) to the lung

Right side of heart (right atrium and right ventricle) contains deoxygenated blood.

Umbilical arteries supply deoxygenated blood from the fetus to placenta, in the umbilical cord.

129. Cardiac output increases by ?

- a) Standing from lying down position
- b) Expiration
- c) Increased cardiac contractility
- d) Parasympathetic stimulation

Correct Answer - C

Ans. is 'c' i.e., Increased cardiac contractility

Cardiac output is the product of stroke volume and heart rate. Hence any factor which affects either the stroke volume or the heart rate or both affects the cardiac output.

A) Factors affecting stroke volume

Stroke volume, which is the amount of blood pumped by the heart during one stroke, depends mainly on three factors : ?

Preload (Degree of ventricular filling during diastole) : - Cardiac preload is represented by volume of venous blood that distends the ventricle, i.e., venous return determines the preload. An increase in preload, i.e., increase in venous return results in a higher end-diastolic volume (Preload). This results in stretching of myocardial fiber and this increase in length of myofibril increases the strength of cardiac contraction in accordance with the Frank-Starling law or Starling's law of the heart. According to Starling's law, greater the initial length of muscle fiber, greater is the force of contraction. The initial length of muscle fiber (length of fiber at the initiation of contraction/systole) refers to length of the fiber at the end of the diastole, i.e., end-diastolic fiber length. Thus, the factors which improve venous return increase the cardiac output by increasing end-diastolic ventricular volume and length, i.e., preload. Opposite is true for factors which decrease venous return.

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130. Coronary blood flow is maximum during which phase of cardiac cycle:

- a) Isovolumic relaxation phase
- b) Isovolumic contraction phase
- c) Ejection phase
- d) Isovolumic contraction phase

Correct Answer - A

Ans. A: Isovolumic relaxation phase

Maximum coronary blood flow occurs during the phase of isovolumetric ventricular relaxation phase

Isovolumetric/isometric relaxation time/IVRT

- An interval in the cardiac cycle, from the aortic component of the second heart sound, that is, closure of the aortic valve, to onset of filling by opening of the mitral valve.
- Ventricular pressure decreases to zero rapidly while aortic pressure decreases only to 80 mm Hg i.e. it remains fairly high.
- Therefore, intra myocardial compression of blood vessels is minimal and perfusion pressure is maintained fairly high.
- So coronary blood flow rises sharply
- Maximum coronary blood flow occurs during this phase
- It can be used as an indicator of diastolic dysfunction.
- Prolonged IVRT indicates poor myocardial relaxation.
- A normal IVRT is about 70 ± 12 ms, and approximately 10ms longer in people over forty years.
- In abnormal relaxation, IVRT is usually in excess of 110ms.
- With restrictive ventricular filling, it is usually under 60 ms

131. Slowest blood flow is seen in ?

a) Arteriole

b) Veins

c) Capillaries

d) Venules

Correct Answer - C
Ans, C. Capillaries

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132. Direct Fick method of measuring cardiac output requires estimation of:

- a) O₂ content of arterial blood
- b) O₂ consumption per unit time
- c) Arteriovenous O₂ difference
- d) All of the above

Correct Answer - D

Direct Fick method and the indicator dilution method are used for measuring cardiac output.

The **Fick principle** states that the amount of a substance taken up by an organ (or by the whole body) per unit of time is equal to the arterial level of the substance minus the venous level (**A-V difference**) times the blood flow. Both arterial and mixed venous (which is equal to pulmonary artery) blood must be sampled in this method.

The principle can be used to determine cardiac output by measuring the amount of O₂ consumed by the body in a given period and dividing this value by the A-V difference across the lungs.

Ref: Barrett K.E., Barman S.M., Boitano S., Brooks H.L. (2012). Chapter 30. The Heart as a Pump. In K.E. Barrett, S.M. Barman, S. Boitano, H.L. Brooks (Eds), *Ganong's Review of Medical Physiology*, 24e.

133. QRS complex is due to:
September 2008

- a) Ventricular repolarization
- b) Atrial depolarization
- c) Conduction through AV node
- d) Ventricular depolarization

Correct Answer - D

Ans. D: Ventricular depolarization

QRS complex is due to ventricular depolarization and atrial repolarization. Normal duration is 0.08 sec.

134. P wave is due to:

- a) Atrial depolarization
- b) Atrial repolarization
- c) Ventricular depolarization
- d) Ventricular repolarization

Correct Answer - A

Answer is A (Atrial Depolarization)

P wave is produced due to atrial depolarization.

Intervals	Events in the Heart During Interval
P wave	<i>Atrial depolarization</i>
PR interval	<i>Atrial depolarization and conduction through AV node</i>
QRS duration	<i>Ventricular depolarization and atrial repolarization</i>
QT interval	<i>Ventricular depolarization plus ventricular repolarization</i>
ST interval (QT minus QRS)	<i>Ventricular repolarization</i>

135. In healthy person, arterial baroreceptor activity is seen at what stag of cardiac systole ?

a) Systole

b) Diastole

c) Both

d) None

Correct Answer - A

Ans. A. Systole

Baroreceptors respond not only to pressure magnitude but also to rate of change of pressure.

At rest, arterial baroreceptors are stimulated during the systolic upstroke of the pressure puke wove

136. SI unit of pressure is ?

a) mmHg

b) cmHg

c) Pascal

d) Torr

Correct Answer - C

Ans. C. Pascal

Blood pressure is the lateral pressure exerted by the column of blood on the walls of the arteries,

Most commonly used unit of BP is mm Hg.

But recently there is a trend towards adopting the system

International 'd' units (SI units).

In SI units, the basic unit for pressure is newton per square meter, and is called pascal (Pa).

137. Healthy adult cardiac reserve is ?

- a) 50 - 100 %
- b) 100 - 200 %
- c) 200 - 250 %
- d) 300 - 400 %

Correct Answer - D

Ans, D. 300 - 400 %

Cardiac reserve

- The maximum percentage that the cardiac output can increase above normal is called is the cardiac reserve.
- Thus, in the healthy adult the cardiac reserve is 300-400 % percent.

138. Critical closing pressure is ?

- a) Arterial pressure minus venous pressure
- b) Capillary pressure minus venous pressure
- c) Pressure below which capillaries close
- d) None of the above

Correct Answer - C

Ans. C. Pressure below which capillaries close

The critical pressure below which the capillaries close is called the critical closing pressure.

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139. All are true about baroreceptors, expect ?

- a) Stimulated when BP decreases
- b) Afferents are through sino-aortic nerves
- c) Stimulation causes increased vagal discharge
- d) Stimulate nucleus ambiguous

Correct Answer - A

Ans. A. Stimulated when BP decreases

Baroreceptors are highly sensitive to any change in mean Bp. When BP rises, baroreceptors are stimulated and their afferent (through sinoaortic nerves) stimulate nucleus of tractus solitarius (NIS) which inhibits the pressor area of vasomotor center i.e. RVLM. This results in decreased sympathetic outflow and, as a result vasodilatation. Bp comes down.

140. Normal velocity of blood is ?

a) 40-50 cm/sec

b) 100-150 cm/sec

c) 200-250 cm/sec

d) 250-300 cm/sec

Correct Answer - A

Ans. A. 40-50 cm/sec

Mean blood velocity in aorta is 40 cm/sec.

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141. Duration of maximum contraction depends upon?

a) Absolute refractive period

b) Relative refractive period

c) Both

d) None of the two

Correct Answer - B

Ans. B. Relative refractive period

During this period, excitability gradually recovers and a new action potential can be elicited sooner with a stronger stimulus.

Action potentials generated very early in the relative refractive period do not rise as sharply as normal action potentials, and have a lower amplitude and shorter duration.

Thus duration of action potential (and thus contraction) depends upon relative refractive period.

If AP is generated early in relative refractive period, it has shorter duration.

And if AP is generated after completion of relative refractive period, it has longer (normal) duration of action potential.

142. Temperature centre is ?

- a) Supraoptic nucleus of hypothalamus
- b) Paraventricular nucleus of hypothalamus
- c) Preoptic nucleus of hypothalamus
- d) Suprachiasmatic nucleus of hypothalamus

Correct Answer - C

Ans. is 'c' i.e., Preoptic nucleus of hypothalamus [Ry' Ganong 23'd/e p. 275)

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143. Stretch impulse is carried by?

a) Ia

b) Ib

c) B

d) C

Correct Answer - A

Ans. A. Ia

A-alpha, (Type Ia) fibers are primary afferent for stretch reflex.

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144. Less mitochondria are seen in -

- a) Red fibers
- b) Type I fibers
- c) White fibers
- d) Slow fibers

Correct Answer - C

Ans. C. White fibers

Type II fibers are white because they lack myoglobin and have a few mitochondria. Their metabolism is glycolytic.

Type II fibers are fast twitch fibers with short duration of twitch.

145. All are true about red muscle fibers except ?

- a) More mitochondria
- b) Glycolytic metabolism
- c) More myoglobin
- d) More oxidative capacity

Correct Answer - B

Ans. B. Glycolytic metabolism

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146. Integration center of tonic labyrinthine reflex is?

a) Spinal cord

b) Medulla

c) Midbrain

d) Cerebral cortex

Correct Answer - B

Ans. B. Medulla

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147. Higher center for righting reflex?

a) Pons

b) Spinal cord

c) Cortex

d) Midbrain

Correct Answer - D

Ans. D. Midbrain

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148. Righting reflex is a ?

- a) Cochlear reflex
- b) Spinal reflex
- c) Vestibular reflex
- d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Vestibular reflex

[Ref Understanding of medical physiology p. 662]

Vestibular reflexes

- The information collected by vestibular apparatus leads mainly to reflex adjustment in posture and eye movements.

Vestibular reflexes are -

- Tonic labyrinthine reflex
- Righting reflex (labyrinthine righting reflex)
- Visual reflex vestibulo-ocular reFlex)

149. Righting reflex is a ?

a) Stretch reflex

b) Postural reflex

c) Spinal reflex

d) Ocular reflex

Correct Answer - B

Ans. B. Postural reflex

Posture refers to the static position of any part of the body.

Movements are the transition from one Posture to the another.

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150. The nucleus involved in Papez circuit is:

a) Pulvinar

b) Intralaminar

c) VPL nucleus

d) Anterior nucleus of Thalamus

Correct Answer - D

Nucleus involved in Papez circuit is anterior nucleus of thalamus.

Ref: Review of Medical Physiology by William Ganong, 22nd Edition, Page 256

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151. Joint position & vibration sense is carried by?

a) Act

b) A(3)

c) AY

d) B

Correct Answer - A

Ans, A. Act

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152. Tonic neck reflex disappears at what age ?

a) 1 month

b) 2 months

c) 3 months

d) 6 months

Correct Answer - D

Ans. D. 6 months

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153. Significance of absence of loss of asymmetric tonic neck reflex in 9 months ?

- a) Decreased muscle tone
- b) Increased muscle tone
- c) Normal phenomenon
- d) None of the above

Correct Answer - B

Ans.B. Increased muscle tone

Asymmetric tonic neck reflex is prominent between 2nd and 4th months.

Persistence of this reflex beyond the age of 5 - 9 months or a constant tonic neck posture are abnormal and usually indicate spastic cerebral palsy.

In spastic cerebral palsy, there is increased muscle tone with hyper-reflexia.

154. Cerebellar damage causes all except ?

a) Dysmetria

b) Hypertonia

c) Ataxia

d) Past-pointing

Correct Answer - B

Ans. B. Hypertonia

Damage to the cerebellum leads to several characteristic abnormalities, including :

- Ataxia
- Hypotonia
- Dysmetria
- Rebound phenomenon
- Decomposition of movement

155. Which receptor get stimulated in moderate cold?

a) CMR-1

b) VR1

c) VRL-1

d) VR2

Correct Answer - A

Ans. A. CMR-1

One is receptor for moderate cold -+ CMR - 1(cold and methanol sensitive receptor - I)

Two types of vanilloid receptors for noxious heat (painful heat) :- I4R-I and VRL-L.

156. Post-ganglionic parasympathetic fibers are -

a) A a

b) A (3

c) A 7

d) C

Correct Answer - D

Ans. D. C

Post-ganglionic autonomic fibers (both sympathetic and parasympathetic) are 'C' type of fibers.

157. Group B nerve fibers are ?

- a) Sympathetic preganglionic
- b) Sympathetic postganglionic
- c) Parasympathetic preganglionic
- d) Parasympathetic post ganglionic

Correct Answer - A

Ans. A. Sympathetic preganglionic

"In both the sympathetic and parasympathetic divisions, preganglionic fibers are myelinated type B fibers".

158. Pain receptors are ?

a) Meissners corpuscle

b) Pacinian corpuscle

c) Free nerve endings

d) Merkel disc

Correct Answer - C

Ans. C. Free nerve endings

Pain receptors are free nerve endings, i.e. they are not enclosed in a capsule.

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159. Ruffini end organ is associated with sensation of:

a) Sustained Pressure

b) Heat

c) Touch

d) None of the above

Correct Answer - A

Meissner's corpuscles are dendrites encapsulated in connective tissue and respond to changes in texture and slow vibrations. Merkel cells are expanded dendritic endings, and they respond to sustained pressure and touch. **Ruffini corpuscles are enlarged dendritic endings with elongated capsules, and they respond to sustained pressure.** Pacinian corpuscles consist of unmyelinated dendritic endings of a sensory nerve fiber, 2 m in diameter, encapsulated by concentric lamellae of connective tissue that give the organ the appearance of a cocktail onion. These receptors respond to deep pressure and fast vibration.

Ref :Barrett K.E., Barman S.M., Boitano S., Brooks H.L. (2012). Chapter 8. Somatosensory Neurotransmission: Touch, Pain, and Temperature. In K.E. Barrett, S.M. Barman, S. Boitano, H.L. Brooks (Eds), *Ganong's Review of Medical Physiology*, 24e.

160. Spinal pathway mainly regulating fine motor activity ?

a) Anterior corticospinal tract

b) Rubrospinal tract

c) Vestibulospinal tract

d) Reticulospinal tract

Correct Answer - B

Ans. B. Rubrospinal tract

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161. Normal cerebral blood flow in ml/min ?

a) 55

b) 150

c) 750

d) 1000

Correct Answer - C

Ans. is 'c' i.e., 750

The cerebral blood flow (CBF) is about 750 ml/min (15% of total cardiac output), or 54 ml/100 gm brain tissue per minute

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162. What is seen in withdrawal reflex ?

a) Extension

b) Flexion

c) Extension followed by flexion

d) None of the above

Correct Answer - B

Ans. B. Flexion

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163. Which of the following has same concentration in CSF and plasma ?

a) Ca^{++}

b) HCO_3^-

c) Glucose

d) Cl^-

Correct Answer - B

Ans. B. HCO_3^-

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164. Sweating is mediated by ?

a) Norepinephrine

b) Epinephrine

c) Acetylcholine

d) Histamine

Correct Answer - C

Ans. C. Acetylcholine

Nerve supply of sweat gland is unique in that it is sympathetic but cholinergic (most other sympathetic sites are noradrenergic)

165. Which thalamic nuclei can produce basal ganglia symptoms ?

a) Lateral dorsal

b) Pulvinar

c) Ventral anterior

d) Intralaminar

Correct Answer - C

Ans. C. Ventral anterior

Motor nuclei (ventral anterior and ventral lateral) of thalamus relay and process messages from basal ganglia (especially globus pallidus) and cerebellum to motor and premotor cortex

166. Which of the following is a cerebellar nucleus ?

a) Caudate nucleus

b) Subthalamic nucleus

c) Fastigial nucleus

d) Pautamen

Correct Answer - C

Ans. C. Fastigial nucleus

Cerebellum is divided into -

1. Cerebellar Cortex (external):- Contains five cells purkinje cells, granule cells, basket cells, stellate cells and golgi cell.
2. Deep cerebellar nuclei (external):- There are four ntclei dmtate, fastigial, globose, and emboliform

167. Salivation of dog when food is given along with bell is?

a) Conditioned reflex

b) Reinforcement

c) Habituation

d) Innate reflex

Correct Answer - A

Ans, A. Conditioned reflex

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168. Precentral gyrus & corticospinal tract are essential for?

a) Vision

b) Olfaction

c) Auditory

d) Voluntary movement

Correct Answer - D

Ans. D. Voluntary movement

Precentral gyrus is the primary motor cortex (Brodmann's Area 4) where the impulse for voluntary activity originates.

169. Number of cones in Retina ?

a) 3-5 millions

b) 10-20 millions

c) 25-50 millions

d) 50-100 millions

Correct Answer - A

Ans. A. 3-5 millions

Number of Cones in retina is 3-4.5 millions whereas number of Rods are 90-100 millions.

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170. Cell bodies of orexigenic neurons are present in ?

- a) Dorsal raphae
- b) Locus coeruleus
- c) Lateral hypothalamic area
- d) Hippocampus

Correct Answer - C

Ans. C. Lateral hypothalamic area

ARC neurons also project to other hypothalamic nuclei, including the orexigenic orexin containing neurons in lateral hypothalamic area, to stimulate appetite.

171. Cushing reflex is associated with all except ?

- a) Hypotension
- b) Increased intracranial pressure
- c) Bradycardia
- d) Tachypnea

Correct Answer - A

Ans. is 'a' i.e., Hypotension

A rise in intracranial pressure causes impaired blood supply to VMC (RVLM) neurons and the local hypoxia and hypercapnia increase their discharge to the systemic resistance vessels, i.e., Cushing reflex. The resultant rise in BP tends to restore cerebral blood flow and over a considerable range, the BP rise is proportional to the increase in intracranial pressure. The increase in BP causes reflex bradycardia through arterial baroreceptors. That is why bradycardia rather than tachycardia is characteristically seen in patients with increase (ICP).

Cushing reflex consists of *hypertension (increased BP), bradycardia and tachypnea*.

172. Which of the following does not have sympathetic noradrenergic fibers ?

a) Blood vessels

b) Sweat gland

c) Heart

d) Eye

Correct Answer - B

Ans. B. Sweat gland

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173. All should be features of a substance to measure GFR, except ?

a) Freely reabsorbed

b) Freely filtered across glomerulus membrane

c) Not secreted by kidney

d) None

Correct Answer - A

Ans. A. Freely reabsorbed

To measure GFR, the substance should have following features:-

- .. Pass freely across the glomerular membrane.
- .. Neither reabsorbed nor secreted by kidney.

174. Renal blood flow is ?

a) 1-1.5 L/min

b) 1.5-2 L/min

c) 2-2.5 L/min

d) 2.5-3 L/min

Correct Answer - A

Ans. A. 1 - 1.5 L/min

- The total renal blood flow (RBF) is approximately 1.1 - 1.3 Lt/min.
 - i.e., 22-25% of cardiac output.
- The kidneys have a high blood flow
 - In resting, healthy, young adult men, renal blood flow averages about 1.2 L/min.
 - This is about 25% of the cardiac output (5 to 6 L/min).
 - Both kidneys together weigh about **300 g**, so **blood flow per gram of tissue averages about 4mL/min**.
 - This rate of perfusion exceeds that of all other organs in the body, except the neurohypophysis and carotid bodies.
 - **The high blood flow** to the kidneys is necessary for a **high GFR** and is not due to excessive metabolic demands.

175. The primary active step for sodium reabsorption in the proximal tubule involves:

- a) Sodium-glucose cotransport across the luminal membrane
- b) Sodium/hydrogen ion countertransport across the luminal membrane
- c) Sodium transport via the $\text{Na}^+\text{-K}^+\text{-ATPase}$ at the basolateral membrane
- d) Sodium-amino acid cotransport across the luminal membrane

Correct Answer - C

Sodium transport via the Na-K-ATPase at the basolateral membrane. This is the only transport step for sodium in the proximal tubule that involves the direct input of energy to move sodium against its electrochemical gradient (in this case from the inside of the cell to the outside).

176. Best measure for GFR ?

a) Serum creatinine

b) Urine output

c) BUN

d) PAN

Correct Answer - A

Ans. A. Serum creatinine

Inulin is more accurate measure of GFR, but is inconvenient because it has to be injected intravascular.

Creatinine is not as accurate as inulin, but creatinine is already present in the blood in steady-state, so the endogenous creatinine clearance can be used without the necessity of having to infuse inulin.

177. Angiotensin II causes all of the following, EXCEPT:

- a) Stimulation of thirst
- b) Aldosterone secretion
- c) Increased ADH secretion
- d) Vasodilation

Correct Answer - D

"Angiotensin II is one of the most potent vasoconstrictors known, being four to eight times as active as norepinephrine on a weight basis in normal individuals". It produces arteriolar constriction and a rise in systolic and diastolic blood pressure. - Ganong

It also acts on the adrenal cortex to increase secretion of aldosterone.

It facilitates the release of norepinephrine by a direct action on postganglionic sympathetic neurons, contraction of mesangial cells with a resultant decrease in GFR and a direct effect on the renal tubules to increase Na⁺ reabsorption.

It acts on the brain to increase water intake (through subfornical organ) and increase the secretion of vasopressin and ACTH.

178. Normal renal threshold for glucose is at plasma glucose level ?

a) 100 mg/dl

b) 200 mg/dl

c) 300 mg/dl

d) 400 mg/dl

Correct Answer - B

Ans. B. 200 mg/dl

- The transport maximum for glucose is 375 mg/min whereas the filtered load of glucose is only 125 mg/min.
- The overall transport maximum for the kidneys, which is normally about 375 mg/min, is reached when all nephrons have reached their maximal capacity to reabsorb glucose.
- Thus, Renal threshold for glucose
 - .. At plasma levels → 200 mg/dl
 - .. At filtered load → 250 mg/min

179. Hyperosmolarity of renal medulla is due to?

a) K

b) Na

c) glucose

d) Cl

Correct Answer - A:B:D

Ans. (B) Na (A) K (D) Cl

The thick ascending limb of loop of Henle is impermeable to water but it actively reabsorbs NaCl.

The thin descending limb of loop of Henle is relatively impermeable to solutes but highly permeable to water.

The most important cause of the high medullary osmolarity is active transport of sodium and co-transport of potassium, chloride and other ions out of the thick ascending limb of loop of Henle into the medullary interstitium.

Most important among all these is NaCl, for maintenance of high medullary interstitium.

180. Most important extracellular buffer ?

- a) Phosphate
- b) Plasma proteins
- c) Ammonia
- d) Bicarbonates

Correct Answer - D

Ans. D. Bicarbonates

Bicarbonates - Bicarbonates are the most important buffers in blood.

This is because the components of this buffer system can be adjusted by the body.

The HCO_3^- concentration is controlled by the kidney while the PCO_2 is controlled through pulmonary circulation.

181. "Delta cells" of stomach secrete ?

a) Cholecystokinin

b) Gastrin-releasing peptide

c) Somatostatin

d) Secretin

Correct Answer - C

Ans. C. Somatostatin

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182. Sugars are primarily absorbed in ?

- a) Duodenum
- b) Jejunum
- c) Ileus
- d) Ascending colon

Correct Answer - B

Ans. B. Jejunum

Absorption of glucose, galactose and fructose occurs mainly in small intestine, especially in the proximal part of jejunum.

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183. Trypsinogen is converted to trypsin by?

- a) Combination of 2 molecules of trypsinogen
- b) Phosphorylation
- c) Removal of few amino acids from trypsinogen
- d) Addition of alkyl group

Correct Answer - C

Ans. C. Removal of few amino acids from trypsinogen

- Several enzymes are synthesized in inactive forms, called proenzymes (zymogens).
- Activated when a small length of the protein is cleaved off from one end through the action of specific protease.
- This causes an irreversible rearrangement of the tertiary structure to yield the active form of the protein.
- Enterokinase cleaves trypsinogen to yield active trypsin. The enzyme cleaves proteins at sites of neutral amino acids, with a preference for aromatic or large aliphatic side chains.

184. Which of the following plant components is not fermented by gastrointestinal microorganisms ?

a) Lignin

b) Cellulose

c) Hemicellulose

d) Pectin

Correct Answer - A

Ans. A. Lignin

Lignin, a non-carbohydrate type of dietary fiber is neither digested (by endogenous human enzymes) nor fermented by gastrointestinal microorganisms.

185. Detergent action of bile salts is due to:

a) Hydropathic

b) Acts as a zwitter ion

c) Amphipathic

d) All

Correct Answer - C
Ans. C. Amphipathic

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186. Lowest pH is seen in which of the gastrointestinal secretion?

a) Gastric juice

b) Bile juice

c) Saliva

d) Pancreatic juice

Correct Answer - A
Ans. A. Gastric juice

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187. Daily salivary secretion is

a) 250-500 ml

b) 1000-1500 ml

c) 2000-2500 ml

d) 3000 ml

Correct Answer - B

Ans.B. 1000-1500 ml

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188. Pancreatic juice rich in water and electrolytes poor in enzymes is secreted in response to :

a) Pancreatozymin

b) Cholecystokinin

c) Secretin

d) Proteins

Correct Answer - C
C i.e. Secretin

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189. Which cells are referred as "Pacemaker cells" with relation to 'BER'?

a) SA node

b) AV node

c) Interstitial cells of Cajal.

d) Pyramidal cells

Correct Answer - C

Interstitial cells of Cajal

Basic Electrical Rhythm (BER):

- Smooth muscle cells of the gastrointestinal tract have spontaneous rhythmic fluctuations in membrane potential between about -65 and -45 mV.
 - BER initiated by Pacemaker cells called "Interstitial cells of Cajal".
- Pacemaker cells -
- Interstitial cells of Cajal.
 - Stellate mesenchymal cells with smooth muscle-like features.
- Location:
- Are absent in esophagus & proximal stomach.
 - In distal stomach & small intestine - Located in outer circular muscle layer near myenteric plexus.
 - In colon - Located at the submucosal border of circular muscle layer.
- Frequency:
- In Stomach & small intestine -
 - Pacemaker frequency is in descending gradient.
 - Pacemaker with the highest frequency usually dominates (Eg., In Heart).

190. Inhibition of myenteric plexus results in

- a) Hyperacidity
- b) Diarrhea
- c) Decreased gut motility
- d) Increased secretions

Correct Answer - C

Ans. C. Decreased gut motility

Myenteric plexus or Auerbach's plexus : - It is an outer plexus lying between the longitudinal and circular muscle layer.

The myenteric plexus controls mainly gastrointestinal motility therefore, peristalsis requires an active myenteric plexus

191. Gastrin is produced by :

a) Pancreas

b) Gastric antral cells

c) Pituitary

d) All

Correct Answer - D
D i.e. All

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192. Primary hormone for secretion of milk ?

a) Oxytocin

b) Prolactin

c) Glucocorticoids

d) Relaxin

Correct Answer - B

Ans. B. Prolactin

Lactogenesis is the synthesis and secretion of milk from breast alveoli.

This requires primarily prolactin

193. Glucagon stimulates

- a) Gluconeogenesis
- b) Glycogenesis
- c) Fatty acid synthesis
- d) Glycolysis

Correct Answer - A

Ans. 'A' Gluconeogenesis.

Glucagon is a polypeptide hormone that is secreted by the A cells of the islets of Langerhans of the pancreas. It acts by increasing cAMP.

- 1) Glucagon stimulates glycogenolysis in the liver but not in muscle. Breakdown of glycogen yields glucose.
- 2) Glucagon stimulates the production of glucose from amino acids (gluconeogenesis). Both glycogenolysis and gluconeogenesis tend to raise plasma glucose levels.
- 3) Glucagon stimulates lipolysis. Breakdown of lipids yields free fatty acids, which may be oxidized completely to carbon dioxide, or incompletely to form ketone bodies.

194. Which of the following is not stored in cell

a) Insulin

b) Cortisol

c) Thyroxin

d) Renin

Correct Answer - B

Ans. B. Cortisol

Peptides and amine hormones are stored in cells within secretory vesicles.

In contrast, steroid hormones are not stored in secretory vesicle before their secretion.

195. Blood tissue barrier in testis is formed by?

- a) Basal lamina & interstitial cells
- b) Adjacent sertoli cells with basal lamina
- c) Basal lamina & spermatogonia
- d) Basal lamina & leydig cells

Correct Answer - B

Ans. B. Adjacent sertoli cells with basal lamina

Junction between adjacent sertoli cells form blood-testis barrier.

196. LH surge is associated with?

- a) Increased estrogen & decreased progesterone
- b) Increased estrogen & increased progesterone
- c) Decreased estrogen & increased progesterone
- d) Decreased estrogen & increased progesterone

Correct Answer - A

Ans. A. Increased estrogen & decreased progesterone

At the time of ovulation (LH surge) estrogen level is high while progesterone level is low.

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197. The interval between ovulation and LH surge is ?

a) 12-24 hours

b) 24-48 hours

c) 48-72 hours

d) 72-96 hours

Correct Answer - B

Ans. B. 24-48 hours

At 36 to 48 h before ovulation, the estrogen feedback effect becomes positive, and this initiates the burst of LH secretion (LH surge) that produces ovulation.

198. Which hormone increases with age ?

a) GH

b) Prolactin

c) Parathormone

d) Insulin

Correct Answer - C

Ans, C. Parathormone

Parathyroid hormone levels rise with age, which may contribute to osteoporosis,

Increasing age affects the hormonal secretion of body.

199. The following is the unit for prolactin level of 20 in blood?

a) mg/ml

b) ng/ml

c) mg/L

d) ng/L

Correct Answer - B

Ans. B. ng/ml

The normal prolactin level is <20 ng/ml.

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200. Human sperm remains fertile for how many hours in a female genital tract ?

a) 6-8 hrs

b) 12-24 hrs

c) 24-48 hrs

d) 72-96 hrs

Correct Answer - C

Ans. C. 24-48 hrs

A human spermatozoon remains fertile for a total of 24-48 hrs. in the female genital tract" --Textbook of reproductive system

Ovum remains fertile for 72 hours.

201. Deficiency of enzyme aromatase leads to deficiency of which hormone ?

a) Cortisol

b) Estrogen

c) Testosterone

d) Mineral corticoids

Correct Answer - B

Ans. B. Estrogen

Aromatase is the enzyme that catalyzes the conversion of androgens into estrogens.

202. After first meiotic division, the primary oocyte remains arrested in ?

a) Diplotene stage

b) Pachytene stage

c) Metaphase

d) Telophase

Correct Answer - A

Ans. A. Diplotene stage

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203. All are androgens except ?

- a) Testosterone
- b) Dihydrotestosterone
- c) Androstenedione
- d) 17a-hydroxprogesterone

Correct Answer - D

Ans. D. 17a-hydroxprogesterone

Androgens are substances which cause development of secondary sex characters in castrated male.

Androgens in male are -

- 1. Testosterone
- 2. Dihydrotestosterone (most potent)
- 3. Dehydroepiandrosterone
- 4. Androstenedione

204. Chronic atrophy of adrenal gland will result in which hormone deficiency ?

a) CRH

b) ACTH

c) Cortisol

d) MSH

Correct Answer - C

Ans. C. Cortisol

Cortisol (the major glucocorticoid) is released by adrenal cortex. CRH is secreted by hypothalamus, and ACTH and MSH are secreted by pituitary.

205. True about thyroid hormone receptor is?

- a) Directly binds to TSH
- b) Directly binds to TRH
- c) Are surface receptors
- d) Causes nuclear transcription after binding with T4

Correct Answer - D

Ans. D. Causes nuclear transcription after binding with T4

TRH and TSH bind to cell membrane receptors (surface receptors). Thyroid hormone (thyroxine) receptors are intranuclear receptors which induce synthesis of specific proteins (transcription of proteins) by increasing expression of specific gene.

206. After injecting testosterone in a hypoandrogenic male, which of the following occurs ?

- a) Decreased FSH secretion
- b) Decreased LH secretion
- c) Increased spermatogenesis
- d) None of the above

Correct Answer - B

Ans. B. Decreased LH secretion

Systemically administered testosterone does not raise the testosterone level in the testis to a great degree (as it is administered systemically), and it inhibits LH secretion (testosterone inhibits LH secretion by inhibition at both hypothalamus and pituitary levels).

So, endogenous testosterone secretion is decreased (LH is necessary for endogenous testosterone secretion).

Thus, testis does not have sufficient testosterone that is necessary for normal spermatogenesis.

Therefore, prolonged administration of systemic testosterone can cause oligospermia or azoospermia.

207. Conversion of chondrocyte into osteogenic cells is caused by ?

a) Insulin

b) IGF-1

c) Growth hormone

d) Thyroxine

Correct Answer - B:C

Ans. (C) Growth hormone (B) IGF-1

- A specific effect of Growth Hormone (GH) on skeletal growth is to convert chondrocytes into osteogenic cells, thus, causing specific deposition of new bone.
- This effect on bone growth is mediated by insulin like growth factor-I (IGF-I).

Thus, conversion of chondrocytes into osteogenic cells :-

- Caused by -+ growth hormone
- Which is mediated by - IGF-1

208. In breast lactiferous ducts are formed under the influence of which hormone?

a) Eestrogen

b) Progesterone

c) LH

d) FSH

Correct Answer - A

Ans. A. Eestrogen

Estrogen stimulates proliferation of the lactiferous ducts while progesterone is responsible for the development of mammary lobules.

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209. Implantation occurs after how many days of fertilization?

a) 3-5 days

b) 5-7 days

c) 7-9 days

d) > 14 days

Correct Answer - B

Ans.B. 5-7 days

About 6-7 days after fertilization the blastocyst attaches to the endometrium, a process called as implantation or embedding. Normal site of implantation is posterior wall of uterus close to fundus.

210. Spermiogenesis refers to ?

- a) Formation of spermatazoa from spermatogonia
- b) Formation of spermatazoa from spermatids
- c) Formation of spermatids from spermatocytes
- d) Formation of secondary spermatocytes from primary spermatocytes

Correct Answer - B

Ans.B. Formation of spermatazoa from spermatids

Spermatogenesis → Formation of spermatazoa from spermatogonia,

Spermiogenesis - Formation of spermatazoa from spermatids.

Thus, spermiogenesis is the last step of spermatogenesis.

211. Spermatogenesis takes place in ?

- a) Epididymis
- b) Seminiferous tubule
- c) Ductus deferens
- d) Prostate

Correct Answer - B

Ans.B. Seminiferous tubule

Spermatogenesis refers to the process of formation of spermatozoa (sperm) from primitive germ cells (spermatogonia).

Spermatogenesis begins at puberty and continues throughout adult life to decline in old age.

In humans, it takes an average of 74 days to form a mature sperm from primitive germ cells.

Spermatogenesis occurs in seminiferous tubules.

212. Which of the following action of GH is mediated by IGF-1

- a) Lipolysis
- b) decreases insulin
- c) Antilipolysis
- d) Na⁺ retention

Correct Answer - C

Ans. (C) Antilipolysis

The actions of growth hormone-mediated via IGF-1 (somatomedin-C) are the indirect effects of growth hormone.

These include

- antilipolytic activity
- insulin-like activity
- protein synthesis
- epiphyseal growth.

213. All of the following stimulate GH release, except-

a) Fasting

b) Exercise

c) Free fatty acids

d) Stress

Correct Answer - C

Ans. C. Free fatty acids

Stimuli that increase secretion of GH are hypoglycemia, exercise, fasting, protein meals, aminoacids (like arginine), stress, glucagon, Pyrogen, lysin vasopressin, apomorphins, L-dopa & alpha-adrenergics, estrogen, androgens and 2-deoxyflucose.

Stimuli that decrease secretion of GH are REM sleep, glucose, Somatostatin, cortisol, FFA, GH itself, IGF-1, and medroxyprogesteron.

214. Half life of T3 ?

a) 10 hours

b) 1 day

c) 6 days

d) 10 days

Correct Answer - B

Ans. B. 1 day

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215. Not increased in stress ?

a) ADH

b) thyroxine

c) GH

d) None

Correct Answer - D

Ans. D. None.

All the given hormones are increased during stress.

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216. Plasma volume is measured by ?

a) Inulin

b) Evans blue

c) Mannitol

d) D20

Correct Answer - B

Ans. B. Evans blue

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217. Most common type of calcium channels of skeletal muscles are ?

a) T type

b) L type

c) R type

d) N type

Correct Answer - B

Ans.B. L type

In skeletal muscle, there is a very high concentration of L-type calcium channels, situated in T-tubules.

218. What is the effect of moderate exercise on cerebral blood flow

- a) Does not change
- b) Increases
- c) Decreases
- d) Initially decreases then increases

Correct Answer - A

Ans. A. Does not change

- Cerebral blood flow is maintained due to autoregulation (between 60-160 mm Hg) in response to moderate exercise.
- During exercise
 - 1. Blood flow decreased in;- Inactive skeletal muscles, kidney' liver' GIT.
 - 2. Blood flow is unaltered in the brain (due to autoregulation).
 - 3. Blood flow is increased in exercising skeletal muscles, heart (coronary circulation), lung.
 - 4. Initially, it decreased due to the redistribution of blood towards muscle but later increased due to an increase in temperature of Skin.

219. 'Patch-clamp' is used for ?

- a) To record facilitated diffusion
- b) To record flow in voltage gated channel
- c) To record osmotic pressure around semipermeable membrane
- d) To record RMP

Correct Answer - B

Ans.B. To record flow in voltage gated channel

Patch-clamp is used to record current flow through a single voltage-gated protein channel.

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220. Gap junctions?

- a) Are absent in cardiac muscles
- b) Are absent in smooth muscles
- c) Are present in cardiac muscles to transmit impulse from one to another myocyte
- d) Are present in cardiac muscles but no role

Correct Answer - C

Ans. C. Are present in cardiac muscles to transmit impulse from one to another myocyte

Gap junctions

- They are intercellular connections called hemichannels or connexons.
- They are made up of protein subunits "Connexins".
- These continuous channel (connexons) permits substances (ions and other) to pass from one cell to other without having to pass through the cell membrane.
- Gap junction is typically seen in cardiac and smooth muscles.
- Because of gap junctions cardiac muscle behaves as a functional syncytium as these gap junctions provide low-resistance Bridge for spread of excitation from one fiber to other-

221. Carbonic anhydrase activity found in all except?

a) Brain

b) Kidney

c) RBC

d) Plasma

Correct Answer - D

Ans.D . Plasma

Carbonic anhydrase (CAse) is an enzyme which catalyzes the reversible reaction of formation of bicarbonate ions, The enzyme is present in renal tubular cells (especially PT), gastric mucosa, exocrine pancreas, ciliary body of eye, brain and RBC.

222. Half life of albumin is:

a) 5 days

b) 10 days

c) 20 days

d) 40 days

Correct Answer - C

Ans. C: 20 days

Albumin has a serum half-life of approximately 20 days. It has a molecular mass of 67 kDa.

Albumin is synthesized in the liver as preproalbumin which has an N-terminal peptide that is removed before the nascent protein is released from the rough endoplasmic reticulum.

The product, proalbumin, is in turn cleaved in the Golgi vesicles to produce the secreted albumin.

Human serum albumin is the most abundant protein in human blood plasma.

It is produced in the liver.

Albumin comprises about half of the blood serum protein. It is soluble and monomeric.

223. Half life of Prealbumin is ?

a) 2 days

b) 10 days

c) 20 days

d) 40 days

Correct Answer - A

Ans. A. 2 days

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224. Calmodulin activates ?

a) Muscle phosphorylase

b) Protein kinase

c) 2, 3 DPG

d) Glucokinase

Correct Answer - A

Ans. A. Muscle phosphorylase

Calcium - calmodulin complex activates myosin light kinase (myosin kinase) which is a phosphorylase and phosphorylate myosin head.

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225. During starvation, which level increases ?

a) Leptin

b) MSH

c) Ghrelin

d) Insulin

Correct Answer - C

Ans. C. Ghrelin

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226. Blood supply of liver [ml/100g/min]

a) 1500-2000

b) 1000-1500

c) 50-60

d) 250-300

Correct Answer - C

Ans. is 'c' i.e., 50-60

[Ref: Ganong 23'd/e p. 570]

- Blood flow through various organs are as follow:-
- Total Blood Flow (blood flow to whole organ in ml/min) r Liver (1500) > kidney (1260) > skeletal muscle (540) > Brain (750) > Skin (162) > Heart (250).

227. Centroacinar cells are present in ?

a) Pancreas

b) Parotid gland

c) Prostate

d) None

Correct Answer - A

Ans. is 'a' i.e., Pancreas

Pancreas

- It is a mixed exocrine and endocrine gland.
A . Exocrine part
- The exocrine portion is a *compound acinar gland*, consists of pancreatic *acini*.
- The acini of pancreas consist of a group of pyramid-shaped acinar cells' (pancreatic parenchymal cells) arranged around a small lumen.
- The centroacinar-cells are seen at the centre of acini where the duct system begins. These cells are an extension of the intercalated duct cells into the acinus. They add bicarbonate ions to pancreatic juice.
- Individual acini are drained by intercalated ducts (interlobular ducts), which drain into larger interlobular ducts, found in connective tissue septa.
B. Endocrine part
- Islets of Langerhans constitute the endocrine part and are scattered throughout the exocrine part, most abundantly in tail region.

228. True about G protein coupled receptors is:

- a) G proteins bind to hormones on the cell surface
- b) All the three subunits alpha, beta and gamma should bind to each other for G protein to act
- c) G proteins act as inhibitory and excitatory because of difference in alpha subunit
- d) G protein is bound to GTP in resting state

Correct Answer - C

G proteins act as inhibitory and excitatory because of difference in alpha subunit [Ref: Harper 26/e p458; Lippincott Biochem 3/e p93; Ganong 22/e p41]

- G-protein coupled receptors (GPCR) are the largest superfamily of cell surface receptors.
- They typically have seven *helices* that traverse the membrane.
- These receptors are *integral membrane proteins* characterized by an *extracellular ligand-binding region*, seven transmembrane helices, and an *intracellular domain that interacts with G-proteins*.
- The function of GPCR is to transduce signals that induce a cellular response to the environment.
- Mechanism:
- The ligand binds to a site on the extracellular portion of the receptor.
- Binding of the ligand to the receptor
 - * activates a G protein associated with the cytoplasmic C-terminal.
- This initiates the production of a "second messenger". The most common of these are
 - * cyclic AMP, (cAMP) which is produced by adenylyl cyclase from ATP and

- * inositol 1,4,5-trisphosphate (IP3)
- The second messenger, in turn, initiates a series of intracellular events such as
 - * phosphorylation and activation of enzymes
 - * release of Ca^{2+} into the cytosol from stores within the endoplasmic reticulum
- G proteins
- G proteins are so-called because they bind the guanine nucleotides GDP and GTP. They are heterotrimers (i.e., made of three different subunits)
- The three subunits are:
 - * G_α , which carries the binding site for the nucleotide. At least 21 different kinds of G_α molecules are found in mammalian cells.
 - * G_P
 - * G_y
- How They Work
- In the inactive state G protein has GDP bound to its G_α subunit.
- When a hormone or other ligand binds to the associated GPCR the GDP is exchanged for GTP
- GTP activates G_α causing it to dissociate from $G\beta\gamma$ (which remain linked as a dimer).
- Activated G_α in turn activates an effector molecule (*adenylyl cyclase- an enzyme in the inner surface of the plasma membrane which catalyzes the conversion of ATP into the "second messenger" cyclic AMP*).
- The beta and gamma subunit do not separate from each other, and $G\beta\gamma$ dimer also activates a variety of effectors.
- The actions of the G_α -GTP complex are short lived because the G-protein has an inherent GTPase activity, resulting in the rapid hydrolysis of GTP to GDP. This leads to reassociation of the G_α unit with the $G\beta\gamma$ dimer. This inactivates the G protein.
- The ability of a ligand to stimulate or inhibit the second messenger depends on the type of G-protein that is linked to the receptor. One family of G-proteins, designated G_s , is specific for stimulation of adenylyl cyclase; another family, designated G_i , causes inhibition of the enzyme. These different actions of G proteins are attributed to different alpha subunits. G_s contains α_s , and G_i contains

Some Types of Gα Subunits

- G_{α_s} —This type stimulates (s = "stimulatory") adenylyl cyclase. G_{α_s} is the target of the toxin liberated by *Vibrio cholerae*, the bacterium that causes cholera. Binding of cholera toxin to G_{α_s} keeps it turned "on". The resulting continuous high levels of cAMP causes a massive loss of salts from the cells of the intestinal epithelium. Massive amounts of water follow by osmosis causing a diarrhea that can be fatal if the salts and water are not quickly replaced.
- G_{α_i} —This inhibits (i = "inhibitory") adenylyl cyclase lowering the level of cAMP in the cell.
- G_{α_q} —This activates phospholipase C (PLC) which generates the second messengers:
 - * inositol trisphosphate (IP3)
 - * diacylglycerol (DAG)
- G_{α_t} —The "t" is for *transducin*, the molecule responsible for generating a signal in the rods of the retina in response to light.

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229. Which of the following act through G protein coupled receptors?

a) Ach Muscarinic receptors

b) Insulin receptors

c) Ach Nicotinic receptors

d) GABA-A receptors

Correct Answer - A

Ans: A. Ach Muscarinic receptors

Ref: Lippincott, 6thed., Pg. 27-28

- M1, M2, M3, M4 and M5 are Ach Muscarinic receptors.
- They are G protein coupled receptors

230. Mechanism of action of cholecystokinin ?

a) Activation of adenylyl cyclase

b) Opening of ion channels

c) Through IP3- DAG system

d) Transcription factors

Correct Answer - C

Ans. C. Through IP3- DAG system

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231. Which hormone acts on JAK-STAT kinase receptor ?

a) TSH

b) Thyroxine

c) GH

d) FSH

Correct Answer - C

Ans.C. GH

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232. Thyroid hormone binds to which receptor ?

a) Membrane

b) Cytoplasmic

c) Nuclear

d) None

Correct Answer - C

Ans. C. Nuclear

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233. Normal range of serum osmolality is (mOsm/Kg) ?

a) 280 - 300

b) 250 - 270

c) 300 - 320

d) 210 - 230

Correct Answer - A

Ans. A . 280 - 300

Normal osmolal concentration (osmolality of plasma is 290 mOsm/Kg.

234. The following is the action of melatonin?

- a) Facilitates ACTH secretion
- b) Prevents sleep induction
- c) Regulates the circadian day night rhythm
- d) Release of TSH

Correct Answer - C

Ans. C. Regulates the circadian day night rhythm

- The principal secretory product of the pineal gland is melatonin.
- Melatonin secretion shows a circadian rhythm, the level being higher at night and lower at day.
- This diurnal variation is brought about by norepinephrine secreted by postganglionic sympathetic nerves that innervate the pineal gland.
- In the dark norepinephrine, secretion is increased which acts on β -receptors to increase intracellular cAMP and cAMP, in turn, produces a marked increase in N-Acetyl transferase activity, an enzyme involved in melatonin synthesis from serotonin.

235. $\text{Na}^+ - \text{K}^+ - \text{Cl}^-$ cotransporter contains ?

- a) 5 transmembrane spanning domain
- b) 7 transmembrane spanning domain
- c) 9 transmembrane spanning domain
- d) 12 transmembrane spanning domain

Correct Answer - D

Ans. D . 12 transmembrane spanning domain

$\text{Na}^+ - \text{K}^+ - \text{Cl}^-$ cotransporter (cation-chloride cotransporter) has 12-transmembrane spanning domains with glycosylation sites on extracellular loop between membrane spans 7 and 8.

236. Von wilebrand factor is synthesized by all except?

a) Endothelial cells

b) Megakaryocytes

c) Hepatocytes

d) None

Correct Answer - C

Ans C. Hepatocytes

Most clotting factors are synthesized in liver except a component of factor VIII. Factor VIII has two components: -

1. Factor VIIIc (coagulant factor VIII): - Synthesized in liver (main source) and kidney.
2. Von Willebrand factor (vWF) : - Synthesized in endothelium (main source) and megakaryocytes.

237. Females have low RBC count compared to males due to ?

a) Low erythropoietin

b) Menstrual blood loss

c) High estrogen

d) Low stem cells

Correct Answer - B

Ans. B. Menstrual blood loss

Differences in blood values between men and women result because of several factors :-

1. Men have higher androgens levels and androgens stimulate RBC production.
2. Women of reproductive age lose blood through menstruation, which lower blood cells.
3. Women typically have more fat than men, and the higher the body fat content, the lower the hematocrit level.

238. ATPase activity is present in

a) Actin

b) Myosin

c) Troponin

d) None

Correct Answer - B

Ans. B. Myosin

Myosin is the protein that constitutes the thick filament s.

Myosin of skeletal muscle is myosin-II

Myosin participates in the contractile mechanism and also functions as an ATPase.

239. Normal ferritin level in adult male ?

a) 5-10 ng/ml

b) 100-200 ng/ml

c) 500-700 ng/ml

d) 800-900 ng/ml

Correct Answer - B

Ans. B. 100-200 ng/ml

Normal serum ferritin

- Males - 30-400 ng/ml
- Females - 30-200 ng/ml

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240. Daily water loss in sweat during normal activities ?

a) 50 - 100 ml

b) 200 - 400 ml

c) 500 - 700 ml

d) 1000 - 1200 ml

Correct Answer - A

Ans. A. 50 - 100 ml

Fluid loss in sweat: This is highly variable, and depends on physical activity and environmental temperature.

The volume of sweat normally is about 100 ml/day.

241. Ionic receptors are all except ?

a) NMDA

b) Kainate

c) mGluR

d) AMPA

Correct Answer - C

Ans. C . mGluR

Inotropic receptors

- Inotropic receptors are transmembrane ion channels which allow different kinds of ion to travel in and out of the cell.
- Binding of neurotransmitter (ligand) either open or close the ion channel.
- Therefore, inotropic receptors are "Ligand gated transmembrane ion channels,"

Examples of inotropic receptors are:-

1. For glutamate - AMPA, Kainate, NMDA
2. For GABA: GABA(a) receptors
3. For acetylcholine: Nicotinic (Nm, Nn)
4. For serotonin - 5HT3

242. Major site of protein glycosylation is ?

- a) ER and golgi body
- b) Ribosome and golgi body
- c) ER and ribosome
- d) Ribosome and cytoplasm

Correct Answer - A

Ans. is 'a' i.e., ER and golgi body [Ref Harper 28th ed p. 514, 515; Lippincott's 5th ed p. 167, 168]

- N- Glycosylation occurs in ER and O-glycosylation occurs in golgi apparatus.

243. In type Ia maple syrup urine disease, gene mutation seen is ?

a) Ela

b) Elb

c) E2

d) E3

Correct Answer - A

Ans. is 'a' i.e., Ela [Ref Harper 27th/e ch. 29; Nelson 18th/e ch. 85.6; Medical biochemistry by sheriff 1st/e p. 513]

Metabolic disorders of branched-chain amino acid catabolism

- As the name implies, the odor of urine in maple syrup urine disease (branched-chain ketonuria) suggests maple syrup or burnt sugar. Decarboxylation of leucine, isoleucine, and valine is accomplished by a complex enzyme system (branched-chain α -ketoacid dehydrogenase) using thiamine pyrophosphate (vitamin B_1) as a coenzyme.
- This mitochondrial enzyme consists of four subunits: Ha, El (3, E2, and E3. Deficiency of this enzyme system causes MSUD. Based on clinical findings and response to thiamine administration, five phenotypes MSUD have been identified classical, intermediate, intermittent, thiamine responsive and E3 deficiency. All forms of MSUD are inherited as an autosomal recessive trait.

244. Sirtuins are associated with ?

a) Memory

b) Metabolism

c) Vision

d) Olfaction

Correct Answer - B

Ans. is 'b' i.e., Metabolism

- Sirtuins are a family of highly conserved *NAD⁺ dependent deacetylase 5* that act as cellular sensors to detect energy availability and modulate metabolic process.
- Two mammalian sirtuins are involved in controlling metabolic process : SIRT-1 (in nucleus) and SIRT-2 (in mitochondria).
- They are activated by high *NAD⁺* levels (low cellular energy status). They, then, deacetylate a variety of proteins causing *induction of catabolic processes and inhibition of anabolic processes*.
- SIRT-1 and SIRT-3 coordinately increase cellular energy stores and ultimately maintain cellular energy homeostasis.
- *Genetic variant in SIRT-1 gene is associated lower risk of cardiovascular mortality and with better cognitive functioning.*
- SIRT-1 variants are associated with decreased basal energy expenditure and a lower lipid peroxidation rate. Therefore, it has been proposed that genetic variation in SIRT-1 may determine the response rates of individuals undergoing *caloric restriction and increased physical activity*.
- Genetic variants of SIRT-3 may be associated with increased longevity (increased lifespan), but there is no evidence of such an association.

245. Which element is required by phosphofructokinase?

a) Magnesium

b) Inorganic phosphate

c) Manganese

d) Copper

Correct Answer - A

Phosphofructokinase (PFK) is —300 amino acids in length, and structural studies of the bacterial enzyme have shown it comprises two similar (alpha/beta) lobes: one involved in ATP binding and the other housing both the substrate-binding site and the allosteric site (a regulatory binding site distinct from the active site, but that affects enzyme activity). The identical tetramer subunits adopt 2 different conformations: in a 'closed' state, the bound magnesium ion bridges the phosphoryl groups of the enzyme products (ADP and fructose-1,6- biphosphate); and in an 'open' state, the magnesium ion binds only the ADP, as the 2 products are now further apart

246. Carboxypeptidase contains which mineral ?

a) Copper

b) Zinc

c) Iron

d) None

Correct Answer - B

Ans. is 'b' i.e., Zinc

- Zinc containing enzymes are *carboxypeptidase*, carbonic anhydrase, alkaline phosphatase, lactate dehydrogenase, alcohol dehydrogenase, glutamate dehydrogenase, RNA polymerase and superoxide dismutase.

247. Enzyme specificity is given by ?

a) K_m

b) $V_{m,}$

c) Both

d) None

Correct Answer - A

Ans. is 'a' i.e., K_m .

- The K_m of an enzyme is the concentration of the substrate that enables the enzyme to function at half maximum activity and is therefore a measure of the specificity of a substrate for the enzyme" Clinical biochemistry
- Actually enzyme specificity is not measured by K_m alone.
- It is measured by the ratio K_{cat}/K_m which is a second order rate constant for the reaction between substrate and free enzyme.
- This ratio is important, for it provides a direct measure of enzyme efficiency and specificity.
- Note : K_{cat} is turnover number and measures the rate of the catalytic process.

248. K_{cat}/K_m is a measure of -

- a) Enzyme efficiency
- b) Speed of enzymatic reaction
- c) Concentration of substrate
- d) Enzyme turn over

Correct Answer - D

Answer-D. Enzyme efficiency

- "The K_m of an enzyme is the concentration of the substrate that enables the enzyme to
- Function at half maximum activity and is therefore a measure of the specificity of a substrate for the enzyme".
- Actually enzyme specificity is not measured by alone.
- It is measured by the ratio K_{cat}/K_m which is a second order rate constant for the reaction between substrate and free enzyme.
- This ratio is important, for it provides a direct measure of enzyme efficiency and specificity.

Note: K_m is turnover number and measures the rate of the catalytic process

249. Q10 in enzyme matches with ?

a) 2

b) 4

c) 8

d) 10

Correct Answer - A

Ans. is 'a' i.e., 2

- Most enzyme show a 50-300% (average 200%) increase in reaction rate when the temperature is increased by 10° , and the ratio of rate constant at two temperatures 10° apart is usually between 1.5 to 4 (average 2) for most enzymes.
- This value is termed as Q10.
- "The rate of enzymatic reaction doubles with every 10° rise in temperature. "

250. Which of the following is a lyase ?

a) Decarboxylase

b) Synthetase

c) Kinase

d) Oxygenase

Correct Answer - A

Ans. is 'a' i.e., Decarboxylase

Enzyme class Important enzymes

Oxidoreductase	Oxidases, Dehydrogenases, Hydroperoxidases, (catalase, peroxidase), oxygenases
Transferase	Amino transferase or transaminase, e.g., SGOT (AST) and SGPT (ALT), kinases (Hexokinase ⁰ glucokinase, pyruvate kinase etc), Transketolases, transaldolases, transcarboxylase
Hydrolases	All digestive enzymes (Pepsin, trypsin, lipases, esterases), lysosomal enzymes, urease, and phosphatase
Lyases	Decarboxylases ^Q , aldolases, hydratases, enolase, fumarase ^Q , Arginosuccinase
Isomerases	Racemases, epimerases, cis- trans- isomerases, mutases
Ligases	Synthatases ^Q , Carboxylases, DNA ligase

251. Hexokinase is ?

a) Ligase

b) Transferase

c) Oxidoreductase

d) Reductase

Correct Answer - B
Ans. is 'b' i.e., Transferase

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252. Which is predominant in normal healthy human ?

a) LDH 1

b) LDH2

c) LDH 3

d) LDH4

Correct Answer - B
 Ans. is 'b' i.e., LDH2

Isoenzyme	Submit composition	Issue	Percentage in serum
LDH I	HHHH	Myocardium, RBC	30
LDH2	HHHM	Myocardium, RBC	35
LDH3	HHMM	Brain, Kidney	20
LDH4	HMMM	Skeletal muscle, Liver	10
LDH 5	MMMM	Skeletal muscle, Liver	5

253. According to IUB system, hydrolases belong to which class ?

a) EC-1

b) EC-2

c) EC-3

d) EC-4

Correct Answer - C

Ans. is 'c' i.e., EC-3

IUB classification

Enzyme code number (EC number)	Enzyme

EC-1	Oxidoreductase
EC-2	Transferase
EC-3	Hydrolases
EC-4	Lyases
EC-5	Isomerases
EC-6	Ligases

254. Which of the following is serine protease ?

a) Pepsin

b) Trypsin

c) Carboxypeptidase

d) None

Correct Answer - B
Ans. is 'b' i.e., Trypsin

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255. Fastest acting enzyme ?

a) LDH

b) Trypsin

c) Catalase

d) None

Correct Answer - C

Ans. is 'c' i.e., Catalase

Measurement of enzyme activity

- The activity of enzyme is measured in terms of the following :
- Unit of enzyme activity : - By international agreement, *one unit enzyme activity is defined as the amount causing transformation of 1.0 micro mole of substrate per minute at 25° C. It is usually expressed as mole of substrate disappeared or mole of product formed per minute.*
- Specific activity : - It refers to the number of enzyme units per milligram of protein. It is a measure of enzyme purity; higher the enzyme purity, more is the specific activity.
- Turn over number : - This refers to the *number of substrate molecules transformed per unit time by a single enzyme molecule (or by a single catalytic site)*, when the enzyme concentration alone is rate-limiting factor. *Catalase has the highest turnover number and hence is the fastest active enzyme. Carbonic anydrase has the 2nd fastest turnover number; therefore, it is 2nd fastest active enzyme (after catalase).* Lysozyme has the lowest turnover number and therefore is slowest acting.

256. Which of the following is high energy compound?

- a) ADP
- b) Glucose-6-phosphate
- c) Creatine phosphate
- d) Fructose-6-phosphate

Correct Answer - C

Ans. is 'c' i.e., Creatine phosphate

High energy compounds

- The energy released during oxidation of monosaccharides, fatty acids and amino acids may not be required immediately. Therefore, there must be some way of storing energy. The energy released during catabolism is captured in the form of a group of compounds known as "high-energy phosphates". The most important member of this group is ATP.
- A compound that liberates 7 Kcal/mol or more on hydrolysis is called high energy compound, or a compound that on hydrolysis undergoes a large (7 kcal/mol) decrease in free energy (ΔG) under standard condition is called high energy compound, i.e., $\Delta G \approx -7$ Kcal/mol. For example, ATP liberates 7.3 Kcal/mol on hydrolysis. High energy compounds are : ?
- Phosphate compounds : Nucleotides (ATP, GTP, UTP, UDP-glucose), Creatinine phosphate, arginine phosphate, 1,3-bisphosphoglycerate, Phosphoenol pyruvate, inorganic pyrophosphate, Carbamoyl phosphate^e, amino acyl adenylate (amino acyl AMP).
- Sulfur compounds : - CoA derivatives (acetyl CoA^e, Succinyl CoA,

- fatty acyl CoA, HMG CoA), S-adenosyl methionine (SAM), adenosine phosphosulfate.
- A compound which liberates < 7 Kcal/mol on hydrolysis is called low energy compound, i.e., a decrease in free energy is < 7 Kcal/mol, i.e., $\Delta G < -7$ Kcal/mol. Low energy compounds are glucose-1-phosphate, fructose-6-phosphate, glucose-6-phosphate, glycerol-3-phosphate, AMP, ADPQ.

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257. Which energy molecule gives 10.5 kcal/molecule?

a) ATP

b) GTP

c) Creatine phosphate

d) Glucose-6-phosphate

Correct Answer - C

Ans. is 'c' i.e., Creatine phosphate

- A compound that liberates 7 Kcal/mol or more on hydrolysis is called high energy compound, or a compound that on hydrolysis undergoes a large (7 kcal/mol) decrease in free energy (ΔG) under standard condition is called high energy compound, i.e.,
 ΔG 7 Kcal/mol.

- For example, ATP liberates 7.3 Kcal/mol on hydrolysis

Metabolite

ΔG Liberated energy in Kcallmole

Phosphoenol pyruvate -14.8 14.8

Carbamoyl phosphate -12.3 12.3

1, 3-Bisphosphoglycerate -11.8 11.8

Acid phosphate -11.2 11.2

Creatine phosphate -10.3 10.3

Arginine phosphate -7.6 7.6

ATP to ADP + Pi -7.3 7.3

ATP to AMP + PPi -7.7 7.7

Glucose-1 -phosphate -5.0 5.0

Glucose-6-phosphate -3.3 3.3

Glycerol-1-phosphate -2.2 2.2

258. All are true about Vitamin B₁₂, except ?

- a) Active form is methylcobalamine
- b) Requires for conversion of homocysteine to methionine
- c) Requires in metabolism of methylmalonyl CoA
- d) Requires for conversion of pyruvate to lactate

Correct Answer - D

Ans. is 'd' i.e., Requires for conversion of pyruvate to lactate

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259. ATP is generated in ETC by ?

a) Na⁺ ATPase

b) Cl⁻ ATPase

c) FoF₁ ATPase

d) ADP Kinase

Correct Answer - C
Ans. is 'c' i.e., FoF₁ ATPase

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260. Atractiloside act as ?

- a) Uncoupler
- b) Inhibitor of oxidative phosphorylation
- c) Inhibitor of complex I of ETC
- d) Inhibitor of complex III of ETC

Correct Answer - B

Ans. is 'b' i.e., Inhibitor of oxidative phosphorylation

Inhibitors of electron transport chain?

- Inhibitors of respiratory chain may be divided into three groups : ?
1. Inhibitors of electron transport chain proper
- These inhibitors inhibit the flow of electrons through the respiratory chain. This occurs at following sites.
- Complex I (NADH to CoQ) is inhibited by : - Barbiturates (amobarbital), Piericidin A (an antibiotic), rotenone (an insecticide), chlorpromazine (a tranquilizer), and guanethidine (an antihypertensive). These inhibitors block the transfer of reducing equivalents from FeS protein to CoQ.
- Complex II is inhibited by : - Carboxin and TTFA inhibit transfer of electron from FADH₂ to CoQ, whereas malonate competitively inhibit from succinate to complex II. Complex III (Cytochrome b to cytochrome c₁) is inhibited by : - Dithionite, antimycin A, BAL (British antilewisite), Naphthoquinone. These inhibitors block the transfer of electrons from cytochrome b to cytochrome c₁.
- Complex IV (cytochrome c oxidase) is inhibited by : - Carbon monoxide, CN⁻, H₂S and azide (N₃⁻). These inhibitors block the transfer of electrons from cytochrome aa₃ to molecular oxygen and therefore can totally arrest cellular respiration.

2. Inhibitors of oxidative phosphorylation

- These compounds directly inhibit phosphorylation of ADP to ATP. Oligomycin inhibits F_0 component of F_0F_1 ATPase. Atractilaside inhibits translocase, a transport protein that transports ADP into mitochondria for phosphorylation into ATP.

3. Uncouples

- As the name suggests, these compounds block the coupling of oxidation with phosphorylation. These compounds allow the transfer of reducing equivalents in respiratory chain but prevent the phosphorylation of ADP to ATP by uncoupling the linkage between ETC and phosphorylation. Thus the energy instead of being trapped by phosphorylation is dissipated as heat. Uncouplers may be :-
 1. Natural :- Thermogenin, thyroxine
 2. Synthetic :- 2, 4-dinitrophenol (2, 4-DNP), 2, 4-dinitrocresol (2, 4-DNC), and CCCP (chlorocarbonylcyanidephenyl hydrazine).

261. Natural uncoupler is ?

a) Thermogonin

b) 2, 4 nitrophenol

c) 2, 4 Dinitrophenol

d) Oligomycin

Correct Answer - A

Ans. is 'a' i.e., Thermogonin

Amongst the given options, a, b and c are uncouplers.

- However, only thermogonin, among these three is a natural (physiological) uncoupler.
- Uncouples
- As the name suggests, these compounds block the coupling of oxidation with phosphorylation. These compounds allow the transfer of reducing equivalents in respiratory chain but prevent the phosphorylation of ADP to ATP^o by uncoupling the linkage between ETC and phosphorylation. Thus the energy instead of being trapped by phosphorylation is dissipated as heat. Uncouplers may be :-
- Natural :- Thermogonin, thyroxine
- Synthetic :- 2, 4-dinitrophenol (2, 4-DNP), 2, 4-dinitrocresol (2, 4-DNC), and CCCP (chlorocarbonylcyanidephenyl hydrazone).

262. Physiological uncoupler is ?

- a) Thyroxine
- b) Free fatty acids
- c) Thermogenin
- d) All of the above

Correct Answer - D
Ans. is 'd' i.e., All of the above

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263. Reducing equivalents produced in glycolysis are transported from cytosol to mitochondria by ?

a) Carnitine

b) Creatine

c) Malate shuttle

d) Glutamate shuttle

Correct Answer - C

Ans. is 'c' i.e., Malate shuttle

- Most of the NADH and FADH₂, entering the mitochondrial electron transport chain arise from citric acid cycle and β -oxidation of fatty acids, located in the mitochondria itself.
- However, NADH is also produced in the cytosol during glycolysis.
- To get oxidized, NADH has to be transported into the mitochondria as respiratory chain (ETC) is located inside the mitochondria.
- Since, the inner mitochondrial membrane is not permeable to cytoplasmic NADH, there are special shuttle systems which carry reducing equivalents from cytosolic NADH (rather than NADH itself) into the mitochondria by an indirect route.
- Two such shuttle systems that can lead to transport of reducing equivalent from the cytoplasm into mitochondria are : -
 1. Malate shuttle (malate-aspartate shuttle system).
 2. Glycerophosphate shuttle.

264. Which of the following is Aldosugar ?

a) Fructose

b) Erythrulose

c) Glucose

d) None

Correct Answer - C

Ans. is 'c' i.e., Glucose

Sugar	Number of carbon atoms	Aldoses (Aldosugars)	Ketoses (ketosugars)
Trioses	2	Glyceraldehyde	Dihydroxyacetone
Tetroses	4	Erythrose	Erythrulose
Pentoses	5	Ribose, Xylose	Ribulose, xylulose
Hexoses	6	Glucose, galactase, mannose	Fructose
Heptoses	7	Glucoheptose	Sedoheptulose

265. PFK-I inhibitor ?

a) AMP

b) Citrate

c) Glucose 6 phosphate

d) Insulin

Correct Answer - B
Ans. is 'b' i.e., Citrate

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266. Phosphofructokinase-1 occupies a key position in regulating glycolysis and is also subjected to feedback control. Which among the following is the allosteric activators of phosphofructokinase-1?

a) Fructose 2, 3 bisphosphate

b) Fructose 2, 6 bisphosphate

c) Glucokinase

d) PEP

Correct Answer - B

The most potent positive allosteric activator of phosphofructokinase-1 and inhibitor of fructose 1,6-bisphosphatase in the liver is fructose 2,6-bisphosphate.

- It relieves inhibition of phosphofructokinase-1 by ATP and increases the affinity for fructose 6-phosphate.
- It inhibits fructose 1,6-bisphosphatase by increasing the K_m for fructose 1,6-bisphosphate.
- Its concentration is under both substrate (allosteric) and hormonal control (covalent modification).

Phosphofructokinase-1 is **inhibited by citrate** and by **normal intracellular concentrations of ATP** and is **activated by 5' AMP**.

Ref: Bender D.A., Mayes P.A. (2011). Chapter 20. Gluconeogenesis & the Control of Blood Glucose. In D.A. Bender, K.M. Botham, P.A. Weil, P.J. Kennelly, R.K. Murray, V.W. Rodwell (Eds), Harper's Illustrated Biochemistry, 29e.

267. Hexokinase is inhibited by ?

a) Glucose-6-phosphate

b) Glucagon

c) Glucose

d) Insulin

Correct Answer - A

Ans. is 'a' i.e., Glucose-6-phosphate [Ref: Harper 29th ed p. 171, 190]

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268. All of the following are inhibited during fasting/ starvation, except ?

a) Hexokinase

b) Glucokinase

c) PDH

d) Pyruvate kinase

Correct Answer - A

Ans. is 'a' i.e., Hexokinase [Ref Harper 29th/e p. 190]

Hexokinase (in contrast to glucokinase) is not affected by feeding/insulin or starvation.

Other three enzymes activity is decreased in starvation.

269. All are used in gluconeogenesis except ?

a) Oleate

b) Succinate

c) Glutamate

d) Aspartate

Correct Answer - A

Ans. is 'a' i.e., Oleate

Substrate of gluconeogenesis are :

- Lactate (lactic acid)
- Pyruvate
- All amino acids (except leucine and lysine)
- Propionate
- Intermediates of citric acid cycle
- Fatty acids are not substrates for gluconeogenesis.

Coming to the question

- Fatty acids (oleate in the question) is not a substrate for gluconeogenesis.
- Succinate is an intermediate of TCA cycle, and is a substrate for gluconeogenesis.
- All amino acids (in the question glutamate and aspartate), except leucine and lysine are substrates for gluconeogenesis.

270. Which of the following vitamins does not participate in oxidative decarboxylation of pyruvate to acetyl CoA ?

a) Thiamine

b) Niacine

c) Riboflavin

d) Biotin

Correct Answer - D
Ans. is 'd' i.e., Biotin

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271. Gluconeogenesis occurs in all except ?

a) Liver

b) Kidney

c) Gut

d) Muscle

Correct Answer - D

Ans. is 'd' i.e., Muscle

- Gluconeogenesis occurs mainly in the liver and to a lesser extent in renal cortex.
- Some gluconeogenesis can also occur in small intestine, but it is not significant.
- Some of the reactions of gluconeogenesis occurs in the mitochondria but most occur in cytosol.
- Gluconeogenesis cannot occur in muscles.
- Glucose-6-phosphatase is absent in muscles therefore, glucose-6-phosphate cannot be degraded to free glucose in muscles. Moreover, glucose-6-phosphate cannot diffuse out of the muscles. Therefore, muscle cannot provide glucose to maintain blood glucose level. Rather, muscle glycogen acts as a source of energy; the glucose-6phosphate enters the glycolysis to produce energy.

272. True about gluconeogenesis ?

- a) Occurs mainly in muscle
- b) It is reverse of glycolysis
- c) Alanine & lactate both can serve as substrate
- d) Glycerol is not a substrate

Correct Answer - C

Ans. is 'c' i.e., Alanine & lactate both can serve as substrate

- Synthesis of glucose from noncarbohydrate precursors is called gluconeogenesis i.e., synthesis of new glucose.
- The major noncarbohydrate precursors (substrate) for gluconeogenesis are lactate, pyruvate, glycerol, glucogenic amino acids, propionate and intermediates of the citric acid cycle.
- All aminoacids, except for leucine and lysine, are substrate for gluconeogenesis.
- Alanine is the most important gluconeogenic amino acid.
- Gluconeogenesis occurs mainly in the liver and to a lesser extent in renal cortex.
- Some gluconeogenesis can also occur in small intestine, but it is not significant.
- Some of the reactions of gluconeogenesis occurs in the mitochondria but most occur in cytosol.
- Gluconeogenesis involves glycolysis, the citric acid cycle plus some special reactions.
- Glycolysis and gluconeogenesis share the same pathway but in opposite direction.
- Seven reactions of glycolysis are reversible and therefore are used with same enzyme in the synthesis of glucose by gluconeogenesis.
- However, three of the reactions of glycolysis are irreversible and

must be circumvented by four special reactions which are unique to gluconeogenesis and catalyzed by : (1) Pyruvate carboxylase, (ii) Phosphoenolpyruvate carboxykinase, (iii) Fructose-1,6-bisphosphatase, (iv) Glucose-6-phosphatase.

- These four enzymes are the key enzymes of gluconeogenesis (or gluconeogenesis enzymes).
- Among these four, pyruvate carboxylase is a mitochondrial enzyme and other three are cytoplasmic enzymes.

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273. Gluconeogenesis from lactate needs all except ?

a) Transport of lactate from muscle to liver

b) Conversion of lactate to pyruvate

c) Transamination of pyruvate to alanine

d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Transamination of pyruvate to alanine

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274.

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Which of the enzyme of glycolysis is a part of gluconeogenesis ?

a) Pyruvate kinase

b) PFK

c) Hexokinase

d) Phosphoglycerate kinase

Correct Answer - D

Ans. is 'd' i.e., Phosphoglycerate kinase

- Seven of the reactions of glycolysis are reversible and are used in the synthesis of glucose by gluconeogenesis. Thus, seven enzymes are common to both glycolysis and gluconeogenesis: (i) Phosphohexose isomerase; (ii) Aldolase; (iii) Phosphotriose isomerase, (iv) Glyceraldehyde 3-phosphate dehydrogenase; (v) Phosphoglycerate kinase; (vi) Phosphoglycerate mutase; (vii) Enolase.
- Three reactions of glycolysis are irreversible which are circumvented in gluconeogenesis by four reactions. So, enzymes at these steps are different in glycolysis and gluconeogenesis.

Reactions in gluconeogenesis	Enzyme in glycolysis	Enzyme
Glucose – Glucose-6-P	Hexokinase/glucokinase	
Glucose-6-phosphatase		
Fructose-6-P – Fructose-1,6-BP	Phosphofructokinase	
Fructose-1-6-bisphosphatase		
Phosphoenolpyruvate – Pyruvate	Pyruvate kinase	
Pyruvate carboxylase PEP carboxykinase		

275. True about glycolysis are all except ?

- a) Provide nutrition to cancer cells
- b) Substrate level phosphorylation at pyruvate kinase
- c) Two carbon end product is formed
- d) NADPH is formed by glyceraldehyde-3-phosphate dehydrogenase

Correct Answer - C

Ans. is 'c' i.e., Two carbon end product is formed

Important facts about glycolysis

- An important biochemical significance is the ability of glycolysis to provide ATP in the absence of oxygen (anaerobic glycolysis) and allows tissues to survive anoxic episodes.
- It occurs in cytosol
- 3 Carbon atoms end product (pyruvate or lactate) is produced.
- Irreversible steps are catalyzed by : - Glucokinase/Hexokinase, phosphofructokinase-1, and pyruvate kinase.
- Reversible steps are catalyzed by : - Phosphohexose isomerase, aldolase, phosphotriose isomerase, glyceraldehyde 3-phosphate dehydrogenase, Phosphoglycerate kinase, Phosphoglycerate mutase, Enolase.
- Energy (ATP) using steps are catalyzed by : - Hexokinase/glucokinase, phosphofructokinase.
- Energy (ATP) production at substrate level are catalyzed by : Phosphoglycerate kinase, Pyruvate kinase.
- Reducing equivalent (NADH) production is catalyzed by : Glyceraldehyde 3-phosphate dehydrogenase.
- Cancer cells derive nutrition from glycolysis as they have lack of O₂ supply because of lack of capillary network. Glycolysis (anaerobic

glycolysis) is the only metabolic pathway in the body which can provide energy by glucose metabolism in anerobic conditions.

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276. Anaerobic glycolysis occurs in all places except

a) Muscles

b) RBCs

c) Brain

d) Kidney

Correct Answer - C

Ans. is 'c' i.e., Brain

There are two types of glycolysis : -

1. Aerobic glycolysis : - It occurs when oxygen is plentiful and the final product is pyruvate, i.e., final step is catalyzed by pyruvate kinase (see the cycle above). Which is later converted to acetyl CoA by oxidative decarboxylation. There is net gain of 7 ATPs. Acetyl CoA enters TCA cycle.
2. Anaerobic glycolysis : - It occurs in the absence of oxygen. The pyruvate is fermented (reduced) to lactate in single stage. The reoxidation of NADH (formed in the glyceraldehyde-3-phosphate dehydrogenase step) by respiratory chain is prevented as same NADH is utilized at lactate dehydrogenase step. So, there is no net production of NADH. Thus, there is net gain of 2 ATP only. Unlike pyruvate which is converted to acetyl CoA to enter into krebs cycle, lactate cannot be further utilized by further metabolic pathways. Thus, lactate can be regarded as dead end in glycolysis. Anaerobic glycolysis occurs in exercising skeletal muscle, RBCs, lens, some region of retina, renal medulla, testis and leucocytes.

277. The number of ATPs generated in krebs cycleare ?

a) 12

b) 24

c) 15

d) 30

Correct Answer - B

Ans. is 'b' > b' i.e., 24

- One turn of the TCA cycle, starting with acetyl CoA produces 10 ATPs. When the starting molecule is pyruvate, the oxidative decarboxylation of pyruvate, the oxidative decarboxylation of pyruvate yields 2.5 ATPs and therefore, 12.5 ATPs are produced when starting compound is pyruvate. Since, two molecules of pyruvate enter the TCA cycle when glucose is metabolized (glycolysis produces 2 molecules of pyruvate), the number of ATPs is doubled. Therefore, 25 ATP molecules, per glucose molecule, are produced when pyruvate enters the TCA cycle.
- Note : Previously calculations were made assuming that NADH produces 3 ATPs and FADH generates 2 ATPs. This will amount a net generation of 30 ATP molecules in TCA per molecule glucose and total 38 molecules from starting. Recent experiments show that these values are overestimates and NADH produces 2.5 ATPs and FADH produces 1.5 ATPs. Therefore, net generation during TCA is 25 ATPs and complete oxidation of glucose through glycolysis plus citric acid cycle yield a net 32 ATPs.
- Energy yield (number of ATP generated) per molecule of glucose when it is completely oxidized through glycolysis plus citric acid cycle, under aerobic conditions, is as follows :-

Pathway	Step	Enzyme	Method of ATP formation	No of ATPs gained per glucose (new calculation)	No of ATPs As per old calculation
Glycolysis	1	Hexokinase		Minus	Minus
Do	3	Phosphofructokinase		Minus	Minus
Do	5	Glyceraldehyde-3-p DH	NADH Respiratory chain	$2.5 \times 2 = 5$	$3 \times 2 = 6$
Do	6	1,3-BPGkinase	ATP Substrate level	$1 \times 2 = 2$	$1 \times 2 = 2$
Do	9	Pyruvate kinase	ATP Substrate level	$1 \times 2 = 2$	$1 \times 2 = 2$
Pyruvate to Acetyl CoA	?	Pyruvate Dehydrogenase	NADH Respiratory chain	$2.5 \times 2 = 5$	$3 \times 2 = 6$
TCA cycle	3	Isocitrate DH	NADH Respiratory chain	$2.5 \times 2 = 5$	$3 \times 2 = 6$
Do	4	Alpha keto glutarate DH	NADH Respiratory chain	$2.5 \times 2 = 5$	$3 \times 2 = 6$
Do	5	Succinate thiokinase	GTP Substrate level	$1 \times 2 = 2$	$1 \times 2 = 2$
Do	6	Succinate DH	FADH ₂ Respiratory chain	$1.5 \times 2 = 3$	$2 \times 2 = 4$
Do	8	Malate DH	NADH Respiratory chain	$2.5 \times 2 = 5$	$3 \times 2 = 6$
Net generation in glycolytic pathway				9 minus 2 = 7	10

minus 2= 8

Generation in pyruvate dehydrogenase reaction

5

•

6

Generation in citric acid cycle

20

•

24

Net generation of ATP from one glucose mole

32

•

38

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278. One Krebs cycle generates how many ATP ?

a) 6

b) 12

c) 24

d) 36

Correct Answer - B

Ans. is 'b' i.e., 12

- This question is slightly different from previous one. Here the examiner is asking about the generation of ATPs per TCA cycle.
- In a single TCA cycle 10 molecules of ATP are produced (12 molecules according to older calculations).

279. Vitamin not required in TCA cycle ?

a) Niacin

b) Riboflavin

c) Thiamine

d) Folic acid

Correct Answer - D

Ans. is 'd' i.e., Folic acid

- Four of the B vitamins are essential in the citric acid cycle :
 1. Riboflavin, in the form of flavin adenine dinucleotide (FAD), a cofactor for succinate dehydrogenase.
 2. Niacin, in the form of nicotinamide adenine dinucleotide (NAD) the electron acceptor for isocitrate dehydrogenase, α -ketoglutarate dehydrogenase, and malate dehydrogenase.
 3. Thiamine (vitamin B₁), as thiamine diphosphate, the coenzyme for decarboxylation in α -ketoglutarate dehydrogenase reaction.
 4. Pantothenic acid, as part of coenzyme A, the cofactor attached to "active" carboxylic acid residues such as acetyl-CoA and succinyl CoA.

280. The energy for glycogenesis is provided by -

a) GTP

b) GDP

c) UTP

d) AMP

Correct Answer - C
Ans. is 'c' i.e., UTP

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281. Branching enzyme is found in ?

a) Glycogenesis

b) Glucogenesis

c) Glycogenolysis

d) Glycolysis

Correct Answer - A
Ans. is 'a' i.e., Glycogenesis

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282. HMP shunt occurs in all organs except ?

a) Liver

b) Adipose tissue

c) RBC

d) Brain

Correct Answer - D

Ans. is 'd' i.e., Brain

- HMP is an alternative route for the oxidation of glucose (beside glycolysis).
- It is also called as "*pentose phosphate pathway*", "*Dickens - Horecker pathway*", "*Shunt pathway*" or "*phosphogluconate oxidative pathway*".
- HMP shunt is required for provision of reduced NADPH and five-carbon sugars (Pentose phosphates) for nucleic acid synthesis.
- *Normally, 90% of glucose is oxidized by glycolysis and 10% is oxidized by HMP shunt.*
- However, in liver and RBCs HMP shunt accounts for oxidation of 30% glucose.
- HMP shunt occurs in the cytosol.
- It is highly active in *liver*, adipose tissue, *adrenal cortex*, *lens*, *cornea*, *lactating (but not the nonlactating) mammary gland*, *Gonads (testis, ovary) and erythrocytes*.
- Activity of this pathway is minimal in muscle and brain, where almost all of the glucose is degraded by glycolysis.

283. Reducing sugar in urine can be detected by-

- a) a) Benedicts test
- b) b) Fehling solution
- c) c) Glucose-oxidase test
- d) d) All of the above

Correct Answer - D

Explanation- Reducing sugar can be detected by- benedict's test, fehling's test, gluco-oxidase test.

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284. Coris disease is due to defect in

- a) Branching enzyme
- b) Debranching enzyme
- c) Myophosphorylase
- d) Hepatic phosphorylase

Correct Answer - B

Ans. is 'b' i.e., Debranching enzyme

Type		Enzyme deficiency	Organ (s) affected
I	von Gierke's disease	Glucose 6-phosphatase	Liver, kidney
II	Pompe's disease	a (1-44) Glucosidase (acid maltase)	All organs
III	Cori's disease/Forbe's disease	Debranching enzyme	Muscle, liver
IV	Andersen's disease	Branching enzyme	Liver, myocardium
V	McArdle's disease	Phosphorylase	Muscle
VI	Hers' disease	Phosphorylase	Liver
VII	Tarui's disease	Phosphofructokinase	Muscle, RBCs
VIII		Phosphorylase kinase	Liver

- There is also on X-linked form of phosphorylase kinase deficiency. This is sole exception as all other glycogen storage diseases are inherited as autosomal recessive trait.

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285. Fructose intolerance is due to deficiency of ?

a) Aldolase B

b) Fructokinas

c) Triokinas

d) Aldolase A

Correct Answer - A

Ans. is 'a' i.e., Aldolase B

Disease

Essential fructosuria

Hereditary fructose intolerance

Galactosemia

transferase (most common), Galactokinase UDP-galactose-4-epimerase

Lactose intolerance

Essential pentosuria
(xylulose reductase)

Dificient enzymes

Fructokinase

Aldolase-B

Galactose-I-phosphate uridyl

transferase

Lactase ((3-galactosidase)

L-xylulose dehydrogenase

286. Glucose is transported in pancreas through which receptor ?

a) GLUT 1

b) GLUT 2

c) GLUT 3

d) GLUT 4

Correct Answer - B

Ans. is 'b' i.e., GLUT 2

- Glucose enters the B cells of pancreatic islets via *GLUT2* transporter and this stimulates the release of insulin.

287. GLUT 2 receptors ?

- a) Insulin dependent
- b) Insulin independent
- c) Found in cardiac muscle
- d) Found in brain

Correct Answer - B

Ans. is 'b' i.e., Insulin independent

- GLUT - 2 is insulin independent (insulin dependent GLUT is GLUT-4).
- It is found in B-cells of islets of pancreas, liver, epithelial cells of small intestine and kidney.
- Also see explanation-4 of session-2.

288. Inhibition of glycolysis by increased supply of O_2 is called ?

a) Crabtree effect

b) Pasteur effect

c) Lewis effect

d) None

Correct Answer - B

Ans. is 'b' i.e., Pasteur effect

Pasteur effect

- It has been observed that under anaerobic condition a tissue or microorganism utilizes more glucose than it does under aerobic conditions.
- It reflects inhibition of glycolysis by oxygen and is called Pasteur effect.
- The Pasteur effect is due to inhibition of the enzyme phosphofructokinase because of inhibitory effect caused by citrate and ATP, the compounds produced in presence of oxygen due to operation of TCA cycle. Crabtree effect
- This is opposite of Crabtree effect, which represents decreased respiration of cellular systems caused by high concentration of glucose.
- When *oxygen supply is kept constant* and glucose concentration is increased, the oxygen consumption by cells falls, i.e., relative anaerobiosis is produced when glucose concentration is increased in constant supply of oxygen.
- It is seen in cells that have a high rate of aerobic glycolysis.
- In such cells the glycolytic sequence consumes much of the available P_i and NAD^+ , which limits their availability for oxidative

- phosphorylation.
- As a result, rate of oxidative phosphorylation decreases, and oxygen consumption also shows a corresponding fall.

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289. Which of the following is not a phospholipid ?

a) Lecithine

b) Plasmalogen

c) Cardiolipin

d) Ganglioside

Correct Answer - D

Ans. is 'd' i.e., Ganglioside

Phospholipids are :

1. Glycerophospholipids (glycerol containing) :- Phosphatidylcholine (lecithin), phosphatidylethanolamine (cephaline), phosphatidylserine, phosphatidylinositol, plasmalogens, lysophospholipids, cardiolipin.
2. Sphingophospholipids (sphingosine containing) :- Sphingomyeline

290. All are true about ketone bodies except ?

- a) Acetoacetate is primary ketone body
- b) Synthesized in mitochondria
- c) Synthesized in liver
- d) HMG CoA reductase is the rate-limiting enzyme

Correct Answer - D

Ans. is 'd' i.e., HMG CoA reductase is the rate-limiting enzyme

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291. Ketone bodies are not used by ?

a) Muscle

b) Brain

c) RBC

d) Renal cortex

Correct Answer - C

Ans. is 'c' i.e., RBC

- Only glucose is the sole fuel for RBCs.
- As RBCs have no mitochondria, they oxidize glucose anaerobically to lactate.
- Liver also cannot use ketone bodies because of lack of succinyl-CoA-acetoacetate-CoA transferase, which is required for activation of ketone bodies.

292. Ketone body formation without glycosuria is seen in ?

a) Diabetes mellitus

b) Diabetes insipidus

c) Starvation

d) Obesity

Correct Answer - C

Ans. is 'c' i.e., Starvation

Amongst the given options, DM and starvation are the causes of ketosis

- .. Diabetes :- Ketosis with hyperglycemia and glycosuria
- .. Prolonged starvation :- Ketosis with low or normal glucose and without glycosuria.
- In diabetic Ketoacidosis:- (i) Positive Rothera's test (due to ketone bodies) (ii) Positive Benedict's test (due to presence of reducing sugar in urine)
- In Starvation ketosis:- (i) Positive Rothera's test (due to ketone bodies), (ii) Negative Benedict's test (no sugar in urine)

293. What is essential for transfer of fatty acid across mitochondrial membrane -

a) Creatine

b) Creatinine

c) Carnitine

d) None

Correct Answer - C
Ans. is 'c' i.e., Carnitine

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294. Krabbes disease is due to deficiency of ?

- a) Sphingomyelinase
- b) Beta galactocerebrosidase
- c) Hexosaminidase
- d) Arylsulfatase

Correct Answer - B

Ans. is 'b' i.e., Beta galactocerebrosidase

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295. Which is an abnormal lipoprotein ?

a) VLDL

b) Chylomicron

c) Lp (a)

d) LDL

Correct Answer - C

Ans. is 'c' i.e., Lp (a)

- Some people have a special type of abnormal LDL called lipoprotein (a) or Lp (a), containing an additional protein, apoprotein-a.
- Elevated Lp(a) levels are associated with an increased risk of CHD.

296. All are true about LDL except ?

- a) More dense than chylomicron
- b) Smaller than VLDL
- c) Transports maximum amount of lipid
- d) Contains maximum cholesterol

Correct Answer - C

Ans. is 'c' i.e., Transports maximum amount of lipid

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297. Major apolipoprotein of chylomicrons ?

a) B-100

b) D

c) B-48

d) None

Correct Answer - C
Ans. is 'c' i.e., B-48

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298. Concentration of which is inversely related to the risk of coronary heart disease ?

a) VLDL

b) LDL

c) HDL

d) None

Correct Answer - C

Ans. is 'c' i.e., HDL

- The level of HDL in serum is inversely related to the incidence of MI.
- As it is "antiatherogenic" or "protective" in nature, HDL is known as "good cholesterol".
- HDL has its beneficial effect by reverse cholesterol transport.

299. Maximum cholesterol is seen in ?

a) VLDL

b) LDL

c) HDL

d) Chylomicrons

Correct Answer - B

Ans. is 'b' i.e., LDL

Maximum triglyceride content	→	Chylomicrons
Maximum exogenous triglyceride	→	Chylomicrons
Maximum endogenous triglyceride	→	VLDL
Maximum cholesterol content	→	LDL

300. Lipid with highest mobility is ?

a) HDL

b) LDL

c) VLDL

d) Chylomicrons

Correct Answer - A

Ans. is 'a' i.e., HDL

- HDL :- Has maximum electrophoretic mobility, has maximum density, has minimum lipid content, has maximum protein (apoprotein) content, are smallest in size, has maximum phospholipid, has minimum triglycerides.
- Chylomicrons :- Have no electrophoretic mobility, have minimum density, have maximum lipid content, have minimum protein content, are largest in size, have minimum phospholipids, have maximum triglycerides.

301. Apolipoprotein E is rich in ?

a) Lysine

b) Arginine

c) Histidine

d) Methionine

Correct Answer - B

Ans. is 'b' i.e., Arginine

- Arginine rich apo-E is isolated from VLDL.
- It contains arginine to the extent of 10 per cent of the total amino acids and accounts for 5 to 10 per cent of total VLDL apoproteins in normal subjects.

302. Primary hypercholesterolemia is ?

a) Type I

b) Type Ha

c) Type IIb

d) Type III

Correct Answer - B
Ans. is 'b' i.e., Type Ha

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303. Interaction involved in primary structure of protein ?

a) Hydrogen bond

b) Disulfide bond

c) Peptide bond

d) Electrostatic bond

Correct Answer - C
Ans. is 'c' i.e., Peptide bond

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304. Amino acid with double chiral is ?

a) Phenylalanine

b) Threonine

c) Tryptophane

d) Tyrosine

Correct Answer - B

Ans. is 'b' i.e., Threonine

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305. Neutral amino acid is ?

a) Aspartate

b) Arginine

c) Glycine

d) Histidine

Correct Answer - C

Ans. is 'c' i.e., Glycine

- Neutral amino acids
- Alanine Aspartate
- Cysteine *Glycine* Glutamine Isoleucine
- Leucine Methionine
- Proline Phenylalanine
- Serine
- Threonine
- Tyrosine Tryptophan
- Valine

306. Polar amino acids are all except ?

a) Glutamic acid

b) Histidine

c) Glutamine

d) Methionine

Correct Answer - D
Ans. is 'd' i.e., Methionine

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307. Amino acid with aliphatic side chain is?

a) Serine

b) Leucine

c) Threonine

d) Aspartate

Correct Answer - B

Ans. 'B' Leucine

Based on the chemical structure of side chain, amino acids are classified into ?

- Aliphatic amino acids:- Alanine, glycine, isoleucine, leucine, valine.
- Hydroxy amino acids:- serine, threonine, tyrosine.
- Sulfur-containing amino acids:- Cysteine, methionine.
- Dicarboxylic amino acids:- Aspartic acid (aspartate), glutamic acid (glutamate).
- Amide containing amino acids:- Glutamine, asparagine (these are amides of dicarboxylic amino acids. Glutamine is an amide of glutamic acid and asparagine is an amide of aspartic acid).
- Aromatic amino acids:- Phenylalanine, tyrosine, tryptophan.
- Imino acids or heterocyclic amino acids:- One of the 20 amino acids, proline is an imino (-NH) acid not an amino (-NH) acid, as are other 19.

308. Serotonin is derived from -

a) Tyrosine

b) Tryptophan

c) Phenylalanine

d) Methionine

Correct Answer - B

Ans. is 'b' i.e., Tryptophan

[Ref Harper 29th e p. 300]

- Tryptophan is a precursor for synthesis of niacin (nicotinic acid), serotonin and melatonin.

309. Catecholamines are synthesized from ?

a) Tryptophan

b) Tyrosine

c) Methionine

d) Histidine

Correct Answer - B

Ans. is 'b' i.e., Tyrosine

- Catecholamines (epinephrine, norepinephrine and dopamine) are synthesized from tyrosin.
- Has been explained in previous sessions.

310. Creatine is made up of all, except ?

a) Glycine

b) Alanine

c) Methionine

d) Arginine

Correct Answer - B
Ans. is 'b' i.e., Alanine

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311. Ninhydrin test is used for ?

- a) Bile salts
- b) Amino acids
- c) Nucleic acid
- d) Lipids

Correct Answer - B

Ans. is 'b' i.e., Amino acids

Important chemical reactions of amino acids

- Following are some important chemical reactions.
 - A. Reaction used to determine amino acid sequence in polypeptide chain : - Generally, amino terminal (N-terminal) of amino acid is tagged with some reagent. It is split off by hydrolysis and tagged amino acid is identified. The reaction is, then, repeated with new N-terminal of subsequent amino acid and so on. The two reactions are used for identification of amino acid sequence : ?
 - Sanger's reaction : - Uses Sanger's reagent (1 -fluoro-2,4-dinitrobenzene) to tag amino terminal.
 - Edman's reaction : - Uses Edman's reagent (phenylisothiocyanate) to tag amino terminal.
 - B. Reaction used to identification of individual or group of amino acids : - These reactions are frequently used for qualitative detection and quantitative measurement of various amino acids.
 - Ninhydrin test : - All α -amino acids.
 - Xanthoproteic reaction : - Aromatic amino acids^e (Tyrosine, tryptophan, phenylalanine).
 - Millan's test^e (Millon-Nasse reaction) : - Tyrosine^o (phenol group of tyrosine). Therefore millon's test is positive in tyrosinosis^o.
 - Aldehyde test : - Tryptophan (indole ring)

- Hopkins-tole reaction : - Tryptophan (indole ring)
- Sakaguch's reaction : - Arginine (guanidinium group of arginine).
- Sulphur test : - Cysteine (sulphydryl group)
- Nitroprusside test : - Cysteine (sulphydryl group)
- Pauly's test : - Histidine (imidazole group)
- Biuret reaction : - Peptide bond
- Diazo reaction ^Q (Pauli's) : - Histidine or tyrosine.

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312. Oxidative deamination is catalyzed by ?

- a) Glutaminase
- b) Glutamine synthase
- c) Glutamate dehydrogenase
- d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Glutamate dehydrogenase

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313. Transamination of Aspartate forms ?

a) Pyruvate

b) Acetyl-CoA

c) Oxaloacetate

d) Alanine

Correct Answer - C

Ans. is 'c' i.e., Oxaloacetate

Transamination

- Transamination involves the reversible transfer of α -amino group of α -amino acid to an α -keto acid to form a new amino acid and a new keto acid. The enzyme catalyze the reaction is called aminotransferase (transaminase). Most transaminases use *α -ketoglutarate (α -keto acid)* as a common acceptor of α -amino group of α -amino acids. All transaminases require pyridoxal phosphate (Vitamin B₆) as a coenzyme^Q. Some of the most important transaminases are : -
- Alanine transaminase (ALT) also called glutamate pyruvate transaminase (GPT) : - It catalyzes the transfer of amino group of alanine to α -ketoglutarate resulting in formation of pyruvate and L-glutamate Q.

ALT

$\text{L-Alanine}^Q + \alpha\text{-ketoglutarate}^Q \longrightarrow \text{Pyruvate}^Q + \text{L-glutamate}^Q \text{ PLP}$

- Aspartate transaminase (AST) also called glutamate oxaloacetate transaminase (GOT) : It catalyzes the transfer of amino group of aspartate to α -ketoglutarate resulting in formation of oxaloacetate and L-glutamate.

AST

$\text{L-Aspartate} + \alpha\text{-ketoglutarate} \longrightarrow \text{Oxaloacetate} + \text{L-glutamate} \text{ PLP}$

- Most amino acids undergo transamination reaction except lysine, threonine, proline and hydroxyproline.
- All the amino groups from amino acids that undergo transamination are collected into one common amino acid, i.e., glutamate. This is important because L-glutamate is the only amino acid that undergoes oxidative deamination at an appreciable rate in mammalian tissue. Thus, formation of ammonia from amino acids occurs mainly via the α -amino nitrogen of glutamate. Transamination is not restricted to α -amino groups. The 6-amino group of ornithine (but not the E-amino group of lysine) undergoes transamination.

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314. In urea cycle which defect is an X linked disease ?

a) Ornithine transcarbamylase

b) Aspartate transcarbamylase

c) Arginase

d) Argininosuccinate synthase

Correct Answer - A

Ans. is 'a' i.e., Ornithine transcarbamylase

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315. Source of ammonia in urine ?

a) Glutaminase

b) Urease

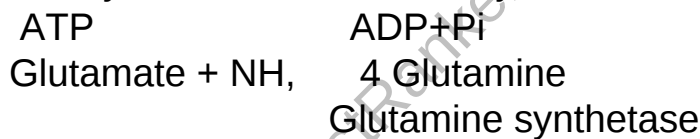
c) Glutamate dehydrogenase

d) Arginase

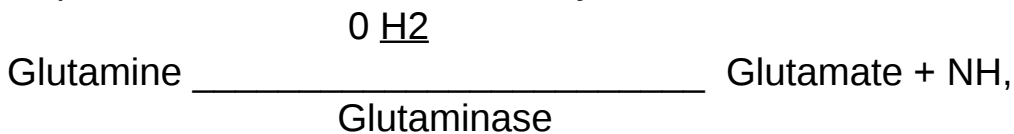
Correct Answer - A

Ans. is 'a' i.e., Glutaminase

- In many tissues like *liver, kidney and brain*, ammonia combines with glutamate to yield glutamine, by the action of glutamine synthase. The brain is a rich source of glutamine synthase and it predominantly detoxifies ammonia by this route.



- Glutamine is a nontoxic major transport form of ammonia. The glutamine is transported by blood to liver where deamination (removal of amino group) of glutamine takes place. Glutaminase cleaves glutamine to yield glutamate and free ammonia (ammonium ion). The ammonia is converted by liver to urea.



- Formation and secretion ammonia by renal tubular cells maintain acid base balance. Ammonia is formed from glutamine by glutaminase. Excretion of ammonia increases in metabolic acidosis and decreases in metabolic alkalosis.

316. Which of the following accumulates in maple syrup urine disease

a) Leucine

b) Valine

c) Isoleucine

d) All

Correct Answer - D

Ans. is 'd' i.e., All

Maple syrup urine disease (MSUD) or branched-chain ketoaciduria

* It is an inborn error of metabolism of branched-chain amino acids *valine*, *leucine* and *isoleucine*.

* It is due to deficiency of an enzyme that catalyzes the second reaction in these amino acids metabolism i.e. **branched chain- α keto** acid dehydrogenase which catalyzes the decarboxylation of branched-chain amino acids.

* As a result, the branched-chain amino acids, leucine, isoleucine and valine, and their α -keto acids accumulate in the blood, urine, and CSF.

* There is a characteristic maple syrup odour to the urine.

* In maple syrup urine disease there is the excretion of branched-chain amino acids (isoleucine, *leucine*, valine) and their keto acids (α -keto β -methyl valerate, α -ketoisocaproate, α -ketoisovalerate) in the urine.

317. Keratin is a ?

- a) Globular protein
- b) Cylindrical protein
- c) Fibrous protein
- d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Fibrous protein

Based on their three-dimensional shape (i.e., conformation), the proteins are divided into two classes :

1. Fibrous proteins : - The polypeptide chains extend along a longitudinal axis without showing any sharp bends, giving them rod or needle like elongated shape. Most of the structural proteins are fibrous proteins, e.g., *collagen, elastin, and keratin*. Fibrous proteins centrifuge more rapidly because of their rod like shape.
2. Globular proteins : - The polypeptide chains are tightly folded and packed into compact structure giving spherical or oval shape. Most enzymes, transport proteins (albumin, globulins), hemoglobin, *myoglobin, antibodies and hormones* are globular proteins.

318. Keratin contains ?

a) Arginine

b) Histidine

c) Lysine

d) All

Correct Answer - D

Ans. is 'd' i.e., All

Amino acids required for specialized products

Creatine	→	Glycine + Arginine + Methionine
Glutathione	→	Glycine + Cysteine + Glutamate
Cystine	→	Cysteine + Cysteine
Purine	→	Glycine + Aspartate + Glutamate + Serine
Pyrimidine	→	Aspartate + Glutamine
Carnosine	→	3-Alanine + histidine
Choline	→	Formed with the help of methionine, glycine, serine, B6
Nitric oxide	→	Arginine
Heme	→	Glycine, Succinyl CoA
Carnitine	→	Methionine + lysine
Keratin	→	Histidine; arginine; lysine (1 : 12 : 4)
Glutamate	→	Gamma-amino butyric acid (GABA)

319. True about Glutathione except ?

- a) Tripeptide
- b) Formed from glutamic acid, glycine, cysteine
- c) Act as antioxidant in reduced state
- d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Glutathione

- Glutathione is a tripeptide of glutamic acid, cysteine, and glycine. The molecule has a sulfhydryl (-SH) or thiol group on the cysteine, which accounts for its strong electron-donating character.
- It exists in two forms : reduced glutathione or GSH. In the reduced state, the thiol group of cysteine is able to donate a reducing equivalent ($H^+ e^-$) to other unstable molecules, such as reactive oxygen species. In donating an electron, glutathione itself becomes reactive, but readily reacts with another reactive glutathione to form glutathione disulfide (GSSG) or oxidized glutathione. GSH can be regenerated from GSSG by the enzyme glutathione reductase.
- While all cells in the human body are capable of synthesizing glutathione, liver glutathione synthesis has been shown to be essential. The liver is the largest GSH reservoir.
- Because of its reducing property, reduced glutathione has potent antioxidant action.

Functions :

- GSH is an extremely important cell protectant. It directly reduces reactive hydroxyl free radicals, other oxygen centered free radicals, and radical centers on DNA and other biomolecules.
- GSH is the essential cofactor for many enzymes which require thiol-

reducing equivalents, and helps keep redox-sensitive active sites on enzymes in the necessary reduced state. GSH is used as a cofactor by ?

- Multiple peroxidase enzymes, to detoxify peroxides generated from oxygen radical attack on biological molecules;
- Transhydrogenases, to reduce oxidized centers on DNA, proteins, and other biomolecules; and
- Glutathione S-transferases (GST) to conjugate GSH with endogenous substances (e.g., estrogens) and to exogenous electrophiles (e.g., arene oxides, unsaturated carbonyls, organic halides), and diverse xenobiotics.
- GSH is a primary protectant of skin, lens, cornea, and retina against radiation damage, and the biochemical foundation of P450 detoxication in the liver, kidneys, lungs, intestinal epithelia, and other organs.
- GSH acts as a carrier in transport of certain amino acids across membranes in the kidney.
- Glutathione (GSH) participates in leukotriene synthesis.

320. Sweaty feet odor in urine is seen in ?

a) Phenylketonuria

b) Maple syrup urine

c) Isovaleric acidemia

d) Alkaptonuria

Correct Answer - C

Ans. is 'c' i.e., Isovaleric acidemia

- "Sweaty Feet" odour is seen in isovaleric acidemia & glutaric aciduria
- "Mousy or Musty Odour" of skin, hair and urine is seen in PKU.
- Burnt sugar like odour is seen in MSU disease (Branched chain ketonuria).
- Boiled cabbage like urinary odour is seen in - Tyrosinemia & hypermethioninemia.
- Swimming pool urine odour is seen in - Hawkinsinuria

321. Salvage purine synthesis refers to ?

- a) Synthesis of purine from ribose-5-phosphate
- b) Synthesis of purine from pyrimidine
- c) Synthesis of purine nucleotides from purine bases
- d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Synthesis of purine nucleotides from purine bases

- Two important purine nucleotides are synthesized : (i) adenosine monophosphate (AMP) and (ii) guanosine monophosphate (GMP). Then AMP and GMP are converted to other purine nucleotides like ADP, ATP, GDP, GTP etc. Purine nucleotides can be synthesized by two pathways - (1) De novo synthesis and (2) Salvage pathway. De novo pathway (De novo synthesis)
- In de novo pathway, the purine nucleotides are synthesized from amphibolic intermediates. Amphibolic intermediates are the intermediary metabolites of amphibolic pathways (eg. citric acid cycle) which have dual purposes, i.e. they serve in catabolism as well as in anabolism.
- In de novo synthesis, purine ring is formed from variety of precursors is assembled on ribose-5-phosphate. Precursors for de novo synthesis are ?
 1. Glycine provides C2, C5 and N7
 2. Aspartate provides N1
 3. Glutamine provides N3 and N9
 4. Tetrahydrofolate derivatives furnish C2 and C8
 5. Carbon dioxide provides C6

Salvage pathway of purine nucleotide synthesis

- Free purine bases (adenine, guanine and hypoxanthine) and purine

nucleosides are formed in cells during the metabolic degradation of nucleic acids and nucleotides.

- These free purine bases and purine nucleosides are reused in the formation of purine nucleotides.
- This is called salvage pathway (salvage means property saved from loss).
- *Salvage synthesis requires far less energy than de novo synthesis.*

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322. Salvage pathway of purine nucleotide synthesis are used by all except ?

a) Brain

b) Liver

c) RBC

d) Leukocytes

Correct Answer - B

Ans. is 'b' i.e., Liver

- Purine nucleotide synthesis occurs by two pathways :
- De novo synthesis
- Salvage pathway
- Liver is the major site of purine nucleotide biosynthesis (de novo).
- Certain tissues cannot synthesize purine nucleotides by de novo pathway, e.g. brain, erythrocytes and polymorphonuclear leukocytes.
- These are dependent on salvage pathway for synthesis of purine nucleotides by using exogenous purines, which are formed by degradation of purine nucleotides synthesized in liver.

323. In humans, end product of purine metabolism

a) Allantoin

b) Uric acid

c) CO₂

d) None

Correct Answer - B
Ans. is 'b' i.e., Uric acid

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324. Rate limiting step in pyrimidine synthesis ?

- a) Dihydro-orotase
- b) Ornithine transcarbamoylase
- c) Aspartate transcarbamoylase
- d) Carbamoyl phosphate synthase-I

Correct Answer - C

Ans. is 'c' i.e., Aspartate transcarbamoylase

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325. At physiological pH DNA is ?

- a) Acidic
- b) Negatively charged
- c) Amphipathic
- d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

DNA is amphipathic

- Amphipathic molecule is one which contains both *polar (hydrophilic)* and *nonpolar (hydrophobic)* regions in its structure, i.e. the part of molecule is water soluble and part is water insoluble.
- In DNA helix
- Hydrophilic (polar) deoxyribose-phosphate of each chain is on outside of molecule.
- Hydrophobic (nonpolar) bases are stacked in.
- Thus DNA is regarded as amphipathic in nature.

DNA is negatively charged and acidic

- Phosphate group lies on outside of molecule of DNA.
- Each phosphate group has a negative charge at physiological pH, making DNA a *negatively charge (anion)* at physiological pH.
- "Histones are strongly cationic and can bind non-specifically to strongly anionic DNA" Harper "At physiological pH DNA is negatively charged, and is associated with positively charged (basic) histones" Ronald Hofmann. o Anionic molecules are acidic in nature.

326. Not present in DNA ?

a) Uracil

b) Thymine

c) Cytosine

d) Adenine

Correct Answer - A

Ans. is 'a' i.e., Uracil

Two types of bases are found in nucleotides : (i) purines and (ii) pyrimidines.

1. Purines : Two major purine bases found both in DNAs as well as RNAs are (i) adenine (A) and (ii) guanine (G).
2. Pyrimidines : Three major pyrimidine bases are (i) cytosine (C), (ii) Uracil (U) and (iii) Thymine (T). Cytosine and uracil are found in RNAs and cytosine and thymine are found in DNAs. Uracil is not found in DNAs^e and thymine is not found in RNAs.

Different major bases with their corresponding nucleosides and nucleotides

Base	Ribonucleoside	Ribonucleotide
Adenine (A)	Adenosine	Adenosine monophosphate (AMP)
Guanine (G)	Guanosine	Guanosine monophosphate (GMP)
Uracil (U)	Uridine	Uridine monophosphate (UMP)
Cytosine (C)	Cytidine	Cytidine (Monophosphate) (CMP)
Base	Deoxyribonucleoside	Deoxyribonucleotide
	Deoxyadenosine	Deoxyadenosine monophosphate

Adenine		(dAMP)
Guanine	Deoxyguanosine	Deoxyguanosine monophosphate (dGMP)
Cytosine	Deoxycytidine	Deoxycytidine monophosphate (dCMP)
Thymine	Deoxythymidine	Deoxythymidine monophosphate (dCMP)

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327. Hereditary orotic aciduria Type-I is due to deficiency of ?

a) Orotate phosphoribosyl transferase

b) Orotic acid decarboxylase

c) UMP synthase

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above [Ref Pankaj Naik p. 310]

Orotic aciduria is a hereditary disorder which can result from a defective enzyme in pyrimidine synthesis.

There is a defect in the multifunctional enzyme UMP synthase which has two activities :?

- 1. Orotate phosphoribosyl transferase
- 2. Orotic acid decarboxylase (orotidylate decarboxylase)
- UMP synthase converts orotic acid to UMP. Thus, in defect of UMP synthase orotic acid can not be converted to UMP and is excreted in urine orotic aciduria.

There are two types of orotic aciduria.

- 1. Type I:- There is deficiency of both the components of UMP synthase, i.e. orotate phosphoribosyl transferase and orotidylate decarboxylase.
- 2. Type II:- There is deficiency of only orotidylate decarboxylase/

328. Molecular interaction, found in the structure of DNA -

a) Hydrogen bond

b) Glycosidic bond

c) Covalent interactions

d) All of the above

Correct Answer - D

Ans. is'd' i.e., All of the above

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329. TATA box is seen in ?

a) Promoter region

b) Palindromic region

c) Enhancer region

d) Silencer region

Correct Answer - A
Ans. is 'a' i.e., Promoter region

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330. Okazaki fragments are formed during ?

a) Transcription

b) Translation

c) DNA replication

d) None

Correct Answer - C
Ans. is 'c' i.e., DNA replication

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331. Which enzyme polymerises okazaki fragments ?

a) DNA polymerase I

b) DNA polymerase II

c) DNA polymerase III

d) RNA polymerase

Correct Answer - C

Ans. is 'c' i.e., DNA polymerase III

Two DNA polymerases act on Okazaki fragments :?

- DNA polymerase III :- Causes polymerization of okazaki fragments, i.e. synthesis of DNA on lagging strand. It also causes synthesis of leading strand.
- DNA polymerase I :- It fills the gap between okazaki fragments when their polymerization is completed, i.e. when the synthesis on lagging strand is completed, DNA polymerase I fills the gap between fully polymerized okazaki fragments.
- Thus, DNA polymerase III is involved during 'elongation' (polymerization of okazaki fragments) and DNA polymerase I is involved during 'termination' (filling the gaps between okazaki fragments).

332. Replication of mitochondrial DNA is caused by which type of DNA polymerase ?

a) a

b) p

c) S

d) y

Correct Answer - D

Ans. is 'd' i.e., y [Ref Pankaj Naik p. 314]

DNA polymerase a :- It has primase activity (i.e. synthesizes RNA primer), and initiates DNA synthesis

DNA polymerase :- It is a DNA repair enzyme ?

DNA polymerase y :- Replicates mitochondrial DNA

DNA polymerase 6 :- Helps DNA synthesis on lagging strand, i.e. elongation of okazaki fragments on lagging strand. It also has 5'3' exonuclease activity for proof reading.

DNA polymerase c :- Helps in DNA synthesis on leading strand. It also has 5'->3'exonuclease activity for proof reading.

333. RNA which contains codon for specific amino acid ?

a) tRNA

b) rRNA

c) mRNA

d) None

Correct Answer - C

Ans. is 'c' i.e., m RNA

The m RNA carries genetic information in the form of codons.

- Codons are a group of three adjacent nucleotides that code for the amino acids of protein.
- Each mRNA molecule is a transcript of antisense or template strand of a particular gene.
- Its nucleotide sequence is complementary to that of antisense or template strand of the gene, i.e. adenine for thymine, guanine for cytosine, uracil for adenine (as RNA does not contain thymine) and cytosine for guanine.
- For example, if antisense strand of DNA has a gene with sequence 5'-TTACGTAC-3', its complementary RNA transcript will be 5'-GUACGUAA-3'.

334. Pseudouridine found in?

a) DNA

b) rRNA

c) mRNA

d) tRNA

Correct Answer - D

Ans. is 'd' i.e., tRNA

- Modified bases found in tRNA are -
 1. Dihydrouridine (**D**) in which one of the double bonds of the base is reduced.
 2. Ribothymidine (T) in which methyl group is added to uracil to form thymine. Thus, tRNA is the only RNA that can contain thymine though only some times.
 3. Pseudouridine (yr) in which uracil is attached to ribose by a carbon-carbon bond rather than a nitrogen bond.

335. RNA is present in ?

a) Cytoplasm

b) Nucleus

c) Ribosome

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

- mRNA is synthesized from DNA by the process of transcription in the nucleus.
- After formation mRNA transport out of the nucleus into cytoplasm.
- t-RNA is also synthesized in nucleus and is transported to cytoplasm.
- Protein synthesis (translation) occurs in ribosomes, and requires both mRNA and tRNA.
- rRNA is present in ribosomes.
- rRNA is synthesized in nucleolus

Thus, RNA can be found in -

1. Nucleus
2. Cytoplasm
3. Ribosome
4. Nucleolus

336. All are characteristics of genetic code ?

a) Overlapping

b) Nonambiguous

c) Universal

d) Degeneracy

Correct Answer - A

Ans. is 'a' i.e., Overlapping

- Characteristic of genetic codes

Genetic codes have following characteristics ?

1. Universal :- Each codon specifically codes for same amino acid in *all species*, e.g. UCA codes for serine and CCA codes for proline in all organisms. That means specificity of codon has been conserved from very early stages of evolution. Exception to the universality of genetic code are found in human mitochondria, where the code :-

- UGA codes for tryptophan instead of serving as a stop codon.
- AUA codes for methionine instead of isoleucine?
- CUA codes for threonine instead of leucine.
- AGA and AGG serve as stop codon instead of coding for arginine.

2. Unambiguous/Specific :- A particular codon always codes for the same amino acid. For example CCU always codes for proline and UGG always codes for tryptophan.

3. Degeneracy/Redundancy :- A given amino acid may have more than one codon. For example, CCU, CCC, CCA and CCG all four codons code for proline. Therefore, there are 61 codons for 20 amino acids.

4. Stop or termination or nonsense codons:- Three of the 64 possible nucleotide triplets UAA(amber), UAG (Ochre) and UGA (opal) do not code for any amino acid. They are called nonsense

codons that normally signal termination of polypeptide chains. Thus, though there are 64 possible triplet codons, only 61 codes for 20 amino acids (as remaining three are non-sense codons).

5. Non overlapping and nonpunctate (Comma less) :- During translation, the code is read sequentially, without spacer bases, from a fixed starting point, as a continuous sequence of bases, taken 3 at a time, e.g. AUGCUA GACUUU is read as AUG/CUA/GAC/UUU without "punctuation" (coma) between codons.

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337. Which of the following is an example of Trinucleotide repeat mutation ?

a) Huntington's chorea

b) Fragile-X-syndrome

c) Friedreich ataxia

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Trinucleotide repeat mutation

- In this type of mutation a codon (i.e. trinucleotide sequence) undergoes amplification and the same codon is repeated continuously so many times in the chain.
- Diseases associated with trinucleotide repeat mutation are Huntington's disease (CAG repeat), Spinocerebellar ataxia (CAG repeat), Friedreich ataxia (GAA repeat), Fragile-X-syndrome (GGG or GCC repeat), Dystrophin myotonia (CTG/CUG repeat), X-linked spinobulbar muscular atrophy (CAG repeat) and Dentatorubral pallidum atrophy (CAG repeat).

338. Frame shift mutation does not effect complete amino acid sequence if it occurs in multiple of ?

a) 1

b) 2

c) 3

d) None

Correct Answer - C

Ans. is 'c' i.e., 3

Frame-shift mutation

- Frameshift mutations^Q occur due to insertion or deletion^Q of one or two bases which causes change in the reading frame distal to the mutation.
- If 1 or 2 base pair change, whole reading frame is changed distal to the mutation, resulting into entirely different protein molecule.
- If 3 base pairs change, single amino acid is incorporated or deleted. The rest of amino acid sequence is same.
- This is because the genetic code is read in form of triplets of nucleotides (i.e. codons).
- If one or two base pairs from the code are removed or inserted, the genetic code will be misread from that change onwards because genetic code is not punctate. Therefore the amino acid sequence translated from the change onwards will be completely changed.
- However if the removal/insertion happens in multiple of three, rest of the reading from does not change and hence the amino acid sequence will not change.

339. Chemical process involved in conversion of progesterone to glucocorticoids is

a) Methylation

b) Hydroxylation

c) Carboxylation

d) None

Correct Answer - B

Ans. is 'b' i.e., Hydroxylation

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340. Which steroid is formed from cholesterol without hydroxylation ?

a) Progesterone

b) Glucocorticoid

c) Mineralocorticoid

d) Estradiol

Correct Answer - A

Ans. is 'a' i.e., Progesterone

- Progesterone is formed before hydroxylation step.

341. Membrane proteins are synthesized in ?

a) Free ribosome

b) Bound ribosome

c) Nucleolus

d) Mitochondria

Correct Answer - B

Ans. is 'b' i.e., Bound ribosome

Ribosomes

- Ribosomes are the actual sites of protein synthesis^Q. The ribosomes are small granules of RNAs. Ribosomes are usually occur in clusters called polyribosomes attached to one mRNA molecule, an arrangement that increases the rate of polypeptide synthesis. There are two types of polyribosomes :-
- .. Free (cytosolic) : - Present free in cytosol.
- .. Bound polyribosome : - Present on rough ER.
- Both types can synthesize protein : ?

Proteins synthesized by polyribosomes

Cytosolic (free)

Polyribosomes

Cytosolic proteins, e.g.,
Hemoglobin

Cytoskeletal proteins

Mitochondrial proteins

Nuclear proteins

Peroxisomal protein

Bound (rough ER) Polyribosomes

Synthesize all membrane proteins

Mitochondria] membrane

ER membrane

Golgi apparatus membrane u Plasma
membrane

Secretory proteins

Lysosomal enzym

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342. Which vitamin is required for transfer of 1-carbon unit?

a) Vitamin A

b) Folic acid

c) Vitamin B₁₂

d) Niacin

Correct Answer - B

Folic acid [Ref Harper 29^m/e p. 537-539, Vasudevan ele p. 400-402]

- Groups, containing a single carbon atom are called one carbon groups. One carbon groups are formed from following amino acids during their metabolism:- *Serine, glycine, histidine and tryptophan*. One carbon groups formed during metabolism are: **methyl (CH₃), methylene (CH₂), methenyl (CH), formyl (CHO) and formimino (CH=NH)**

These one carbon groups are transferred by way of tetrahydrofolate (THF), which is derivative of folic acid^o. One carbon groups carried by THF are attached either to nitrogen N⁵ or M^{C'} or to both N⁵ and N^{''}). Different one carbon derivatives of THF are- N⁵- methyl THF, N⁵, N^o-methylene THF, N⁵, N^{''}-methenyl THF, N⁵-formyl THF and N⁵-formimino THE These derivatives are interconvertable.

343. Major form of folic acid to transfer one carbon is ?

a) Methylene THF

b) Formyl THF

c) Methyl THF

d) All

Correct Answer - A

Ans. is 'a' i.e., Methylene THF

Folic acid

- The active form of folic acid (pteroyl glutamate) is tetrahydrofolate (THF).
- THF serves as a carrier of one-carbon (C_1) unit⁰ during several biosynthetic reactions like nucleic acid^Q and amino acid metabolism.
- Two other cofactors are also known to be involved in the addition of one carbon (C_1) unit to a metabolic precursor, biotin in carboxylation reaction and S-adenosylmethionine (SAM) as methylating agent.
- However, folic acid is more versatile than either of these two because it can transfer the C_1 units in several oxidation states.
- THF acts as a carrier of one carbon unit⁰.
- The one carbon units can be : Methyl (CH_3), methylene (CH_2), methenyl (CH), formyl (CHO), or formimino ($CH=NH$).
- One carbon unit binds to THF through N^5 or $N^{1°}$ or both N^5 , $N^{1°}$ position.
- For example, if formyl unit is attached to N^5 , it is called N^5 -formyl THF; if methylene unit is attached to both N^5 and $N^{1°}$, it is called N^5 , $N^{1°}$ methylene THF.
- Carbon units attached to N^5 are formyl, formimino, or methyl;

attached to N¹⁰ is formyl; and attached to both N⁵-N¹⁰ are methylene or methenyl.

- So, various possible THF are : - N⁵-Formyl THF, N⁵-formimino THF, N⁵-methyl THF, N¹⁰-formyl THF, N⁵-N¹⁰methylene THF and N⁵-N¹⁰-methenyl THF.
- THF receives the C, units from various donor molecules during catabolic reactions and can transfers them to specific acceptors for the synthesis of various compounds.
- The major point of entry for one-carbon unit into substituted folates is methylene THF, which is formed by the reaction of glycine, serine and choline. Serine is the most important source of substituted folates for biosynthetic reactions, and activity of serine hydroxymethyltransferase is regulated by the state of folate substitution and availability of folate.

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344. Riboflavin deficiency is assessed by ?

- a) Transketolase
- b) Glutathione reductase
- c) PDH
- d) None

Correct Answer - B

Ans. is 'b' i.e., Glutathione reductase

Riboflavin (Vitamin B2)

- Riboflavin is also called Warburg yellow enzyme.
- Riboflavin provides the reactive moieties of the coenzymes flavin mononucleotide (FMN) and flavin adenine dinucleotide (FAD).
- Flavin coenzymes are involved *in oxidoreduction reactions as electron carriers*.
- These reactions include the mitochondrial respiratory chain, key enzymes in fatty acid and amino acid oxidation and the citric acid cycle.

Flavin dependent (flavoprotein) enzymes are :

- FMN dependent : **L-amino acid oxidase**, NADH dehydrogenase.
- FAD dependent : **Complex II of respiratory chain**, microsomal hydroxylase system, D-amino acid oxidase, xanthine oxidase, succinate dehydrogenase, acyl-CoA dehydrogenase, glycerol-3-phosphate dehydrogenase, pyruvate dehydrogenase, α -ketoglutarate dehydrogenase.
- Deficiency of riboflavin is characterized by cheilosis, desquamation and inflammation of tongue, and a seborrheic dermatitis.
- Riboflavin nutritional status is assessed by measurement of activation of glutathione reductase by FAD added in vitro.

345. Riboflavin is a constituent of ?

a) FMN

b) NAD

c) PLP

d) THF

Correct Answer - A

Ans. is 'a' i.e., FMN

- Riboflavin is also called Warburg yellow enzyme.
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- Flavin coenzymes are involved *in oxidoreduction reactions as electron carriers*.
- These reactions include the mitochondrial respiratory chain, key enzymes in fatty acid and amino acid oxidation and the citric acid cycle.

346. The main function of Vitamin C in the body is

a) Coenzyme for energy metabolism

b) Regulation of lipid synthesis

c) Involvement as antioxidant

d) Inhibition of cell growth

Correct Answer - C

Ans. is 'c' i.e., Involvement as antioxidant

Vitamin C (Ascorbic acid)

- Ascorbic acid (Vitamin C) is also called antiscorbutic factor. It is very *heat labile*, especially in basic medium.
- Ascorbic acid itself is an active form. Maximum amount of vitamin C is found in adrenal cortex.
- Ascorbic acid functions as a reducing agent and scavenger of free radicals (antioxidant). Its major functions are:-
- In collagen synthesis :- Vitamin C is required for post-translational modification by hydroxylation of proline and lysine residues converting them into hydroxyproline and hydroxylysine. Thus vitamin C is essential for the conversion of procollagen to collagen, which is rich in hydroxyproline and hydroxylysine. Through collagen synthesis, it plays a role in formation of matrix of bone, cartilage, dentine and connective tissue.
- 1. Synthesis of norepinephrine from dopamine by dopamine-(3-monoxygenase (dopamine- β -hydroxylase) requires Vitamin C.
- 2. Carnitine synthesis
- 3. Bile acid synthesis :- 7- α -hydroxylase requires vitamin C.
- 4. Absorption of iron is stimulated by ascorbic acid by conversion of ferric to ferrous ions.

- 5. During adrenal steroid synthesis, ascorbic acid is required during hydroxylation reactions.
- 6. Tyrosine metabolism : - Oxidation of P-hydroxy-phenylpyruvate to homogentisate.
- 7. Folate metabolism : - Folic acid is converted to its active form tetrahydrofolate by help of Vitamin C.

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347. Which of the following trace element has vitamin E like action:

a) Selenium

b) Cheomycin

c) Copper

d) Zinc

Correct Answer - A
Selenium

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348. Glutathione requires which vitamin to act as antioxidant ?

a) Vitamin E

b) Niacin

c) Vitamin C

d) Vitamin A

Correct Answer - B
Ans. is 'b' i.e., Niacin

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349. All are true about vitamin E except ?

- a) Act as antioxidant
- b) Prevent lipid peroxidation of cell membrane
- c) Water soluble vitamin
- d) Chemically tocopherol

Correct Answer - C

Ans. is 'c' i.e., Water soluble vitamin

- Vitamin E is a fat soluble vitamin (not water soluble).
- All other options are correct.

350. The mineral having action like vitamin E ?

a) Calcium

b) Iron

c) Selenium

d) Magnesium

Correct Answer - C

Ans. is 'c' i.e., Selenium

- Selenium functions as an antioxidant along with vitamin E.
- Selenium is a constituent of glutathione peroxidase, an antioxidant enzyme which prevents against oxidative damage.
- Selenium also is a constituent of iodothyronine deiodinase, the enzyme that converts thyroxine triiodothyronine.

351. Blood form of folic acid is -

a) Folinic acid

b) Pteroglutamate

c) Methyl THE

d) None

Correct Answer - C

Ans. is 'c' i.e., Methyl THE

- Folic acid is absorbed in the jejunum.
- Following absorption, folic acid is transported in blood by two (3-globulins).
- The major circulating form is methyltetrahydrofolate and the normal concentration range is 5-15 ng/ml.
- Once it arrives in the liver, the methyl derivatives are taken up by hepatocytes where various coenzyme are produced. o Folic acid is not stored in the body.

Remembers

- Major circulating form of folic acid —0 methyl THE
- Major point of entry for 1 carbon transfer by substituted folate -4 methylene THE

352. Not obtained from plant source ?

a) Cobalamine

b) Riboflavin

c) Thiamine

d) Vitamin A

Correct Answer - A

Ans. is 'a' i.e., Cobalamine

- Vitamin B12 (cobalamin or cynocobalmin) is present only in food of animal origin.
- Other three vitamins can be taken from plant source.

353. The function of vitamin K largely depends on which mineral ?

a) Selenium

b) Calcium

c) Iron

d) Magnesium

Correct Answer - B

Ans. is 'b' i.e., Calcium

- Vitamin K plays an important role in blood coagulation for it is required for the post-translational processing of several clotting factors (factor II, VII, IX and X).
- Maturation of these clotting factors requires the conversion of glutamyl residues of precursor proteins into 'gamma-carboxyglutamate (Gla) residues by addition of carboxylate group. This carboxylation of glutamyl residue is vitamin K dependent.
- The gamma-carboxyglutamate (Gla) residues so formed serve as binding site for calcium ions. Each Gla contains two negative charges which chelate the positive calcium ion.
- After binding to Gla residue on activated clotting factor, calcium binds with negatively charged phospholipids present on the platelet cell membrane.
- In this way, bridging of the phospholipids the Gla residue of prothromin occurs via calcium ion.

354. Which Vitamin is involved in Redox reactions

a) Pyridoxin

b) Biotin

c) Folic acid

d) Riboflavin

Correct Answer - D

Ans. is 'd' i.e., Riboflavin

- Riboflavin and niacin are involved in redox (reduction and oxidation) reactions.

355. Which is not a dietary fiber ?

a) Lignin

b) Lactulose

c) Pectin

d) Cellulose

Correct Answer - B

Ans. is 'b' i.e., Lactulose

Dietary fibres (Review)

- Dietary fibre consists of unabsorbable cell wall and other constituents of vegetable food like cellulose^Q, lignin, hemicellulose^e, gums, pectins^o, alginates and other polysaccharides.
- In herbivorous animals, intestinal microorganism breakdown these polysaccharides into acetate, propionate and butyrate.
- These polysaccharides contain 1-3-glycosidic linkages.
- Therefore, they cannot be digested by α -amylase present in human saliva and pancreatic juice because α -amylase breaks α -glycosidic bond (especially 1-4 α linkage).
- So, dietary fibers are not digested or hydrolyzed but are fermented by colonic bacteria except for lignin, which is neither digested nor fermented by intestinal microorganisms^o.
- Dietary fibre absorbs water in the intestine, swells, increases bulk of stool by increasing water content of faeces and softens it, decreases transit time by facilitating colonic transit.
- "The presence of fibre shortens the transit times^e and increases the stool bulk".

Dietary fibre is of two types : -

- .. Soluble fibre^e : - These are pectin, alginates, and gums. These

absorb upto 15 times its weight in water as it moves through GIT, producing softer stools. Its good sources are oat, flaxseeds, peas, beans, apple, citrus fruits, carrots, bareley and psyllium.

2. Insoluble fibre° : - These are cellulose, hemicellulose and lignin. These promote movement of material through digestive system and increases stool bulk. Its good sources are wheat flour, wheat bran, nuts and vegetables.

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356. Immediate source of energy is ?

a) Cori's cycle

b) HMP

c) ATP

d) TCA cycle

Correct Answer - C

Ans. is 'c' i.e., ATP

There are three energy systems to provide energy for muscular activities.

- Immediate energy system : Energy is provided by stored ATP and creatine phosphate.
- Anaerobic glycolytic system (lactic acid system) : Energy is generated by utilization of glucose or glycogen by anaerobic glycolysis. This energy is also generated early.
- Aerobic or oxidative system : Energy is generated by utilization of glucose/glycogen, and fatty acids through oxidative pathways, e.g. TCA cycle.
- These three energy systems operate as a continuum; each system is always functioning, even at rest. What varies is the relative contribution each system makes to total ATP production at any given time.

	Immediate energy system	Anaerobic glycolytic system	Oxidative (aerobic) system
Substrates	ATP, creatine phosphate	Glucose or glycogen	Glucose or glycogen, fatty acids
Energy production	Very fast	Fast	Slow

Peak at	0-30 sec.	20-180 sec.	>3 min
Limiting factor	Depletion of CrP, ATP	Lactic acid as_ vitation	Glycogen depletion
Activity example	Powerlifting & weight lifting, <i>short sprints</i> Jumping, throwing	Longer sprints Middle distance team sports Ball games (Soccer, rugby)	Endurance events Team sports Ball games (Soccer, field hockey)

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357. Instant energy to muscle is provided by which pathway?

a) HMP shunt

b) Embden mayerhoff pathway

c) Cori cycle

d) TCA cycle

Correct Answer - B

Ans. is ' b' i.e., Embden mayerhoff pathway

- ATP and creatine phosphate provide immediate energy..
- Anaerobic glycolysis (EMP) provides early energy.

358. During starvation, muscle uses ?

a) Fatty acids

b) Ketone bodies

c) Glucose

d) Proteins

Correct Answer - A
Ans. is 'a' i.e., Fatty acids

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359. Fatty acids used by all except ?

a) Liver

b) Muscle

c) Brain

d) Kidney

Correct Answer - C

Ans. is 'c' i.e., Brain

- There is no stored fuel in brain, but it utilized 60% of total energy under resting conditions.
- Glucose is virtually the sole fuel for the brain, except in prolonged starving when ketone bodies are the major source.
- Fatty acids do not serve as fuel for the brain, because they are bound to albumin in plasma; hence cannot cross blood-brain barrier.

360. Metabolic change seen in starvation are all except?

a) Increased gluconeogenesis

b) Increased glycolysis

c) Ketogenesis

d) Protein degradation

Correct Answer - B

Ans. is 'b' i.e., Increased glycolysis

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361. Action of metalloproteinase ?

- a) Degradation of collagen
- b) Polymerization of collagen
- c) Oxidation of collagen
- d) Stimulation of collagen

Correct Answer - A

Ans. is 'a' i.e., Degradation of collagen

- Degradation of collagen and other ECM (extracellular matrix) proteins is achieved by matrix metalloproteinases (MMPs).
- MMPs is a family of enzymes that have in common a 180-residue zinc protease domain.

Matrix metalloproteinases include :-

- Interstitial collagenase (MMP-1, 2, and 3) : Cleave the fibrillar collagen types I, II and III.
- Gelatinases (MMP-2 and 9) : Degrade amorphous collagen and fibronectin.
- Stromelysins (MMP-3, 10 and 11) : Act on proteoglycans, laminin, fibronectin and amorphous collagen.
- Membrane-bound MMPs (ADAMs) : Cleave membrane-bound precursor forms of TNF and TGF- α , releasing the active molecule.

362. Protein catabolism is increased in ?

a) Starvation

b) Burns

c) Surgery

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Conditions causing increased protein catabolism

- Multiple trauma
- Infection and sepsis
- Burns
- Fever
- Surgery
- Long bone fracture
- Prolonged starvation
- Prolonged corticosteroid therapy

363. Heme is which porphyrin ?

a) Type I

b) Type II

c) Type III

d) Type IV

Correct Answer - C
Ans. is 'c' i.e., Type III

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364. Hypercalcemia in sarcoidosis all are true except?

- a) Parathormone level is increased
- b) PTHrP level is increased
- c) Calcitriol level is increased
- d) Oral steroids are useful

Correct Answer - A

Answer- A. Parathormone level is increased

- Extrarenal synthesis of calcitriol [1,25(OH)₂D₃] is central to the pathogenesis of abnormal calcium metabolism in sarcoidosis.
- Sarcoidosis causes an increase in 1, 25-dihydroxy vitamin D, the active metabolite of vitamin D, which is usually hydroxylated within the kidney, but in sarcoidosis patients hydroxylation of vitamin D can occur outside the kidneys, mainly inside the immune cells found in the granulomas and produces 1 alpha, 25(OH)₂D₃, which is the main cause for hypercalcemia in sarcoidosis.
- PTH release is inhibited by hypercalcaemia and high levels of calcitriol, so PTH level is suppressed in sarcoidosis.

365. Hay's sulphur test is used to detect which of the following ?

- a) Bile salts in urine
- b) Reducing sugar in urine
- c) Ketone bodies in urine
- d) Urobilinogen in urine

Correct Answer - A

Ans. is 'a' i.e., Bile salts in urine

Tests

Rothera's test
(nitroprusside test)
Gerhardt's test (ferric chloride test)
Benedict's test
Fehling's test
Hay's sulphur test
Fouchet's (bismuth sulphate test)
Gmelin's (nitric acid) test
Vanden Bergh test
Ehrlich's test
Schlesinger's test
Ehrlich's aldehyde test

Used for

Ketone bodies in urine :- acetone and acetocetate
Ketone bodies in urine :- acetoacetate.
Reducing sugars in urine
Reducing sugars in urine
Bile salts in urine
Bile pigment : bilirubin
Bile pigment : bilirubin
Bile pigment : bilirubin
Bilinogens (stercobilinogen, urobilinogen)
Bilins (stercobilin, urobilin).
Porphobilinogen and urobilinogen in urine

366. True statement about hemoglobin is ?

- a) Each hemoglobin molecule is made of 4 polypeptides of each subunit
- b) Two alpha and two beta subunits having a O₂ attached to each subunit
- c) Each hemoglobin molecule binds to only one O₂ molecule
- d) Each hemoglobin has one heme molecule

Correct Answer - A

Ans. is 'a' i.e., Each hemoglobin molecule is made of 4 polypeptides of each subunit

367. All are true about chaperones except ?

- a) Cause folding of proteins
- b) Are lipid in nature
- c) May have ATPase activity
- d) Include heat shock proteins

Correct Answer - B

Ans. is 'b' i.e., Are lipid in nature

- Chaperones are proteins (not lipid).

Chaperones

- Certain proteins play a role in the assembly or proper folding of other proteins without themselves being components of the latter.
- Such proteins are called molecular chaperones.
- Most chaperones exhibit ATPase activity and bind ADP and ATP.
- This activity is important for their effect on folding.

Some Properties of Chaperone Proteins

- Present in a wide range of species from bacteria to humans
- Many are so-called *heat shock proteins (Hsp)*
- Some are inducible by conditions that cause unfolding of newly synthesized proteins (eg, elevated temperature and various chemicals)
- They bind to predominantly hydrophobic regions of infolded proteins and prevent their aggregation
- They act in part as a quality control or editing mechanism for detecting misfolded or otherwise defective proteins
- Most chaperones show associated ATPase activity, with ATP or ADP being involved in the protein-chaperone interaction
- Found in various cellular compartments such as cytosol, mitochondria, and the lumen of the endoplasmic reticulum

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368. Which of the following is the major proteoglycan of synovial fluid ?

a) Chondroitin sulfate

b) Dermatan sulfate

c) Heparan sulfate

d) Hyaluronic acid

Correct Answer - D

Ans. is 'd' i.e., Hyaluronic acid

	Distribution
Hyaluronic acid	Synovial fluid (provides viscosity), vitreous humor, loose connective tissue)
Chondroitin sulfate	Cartilage, bone, tendon, ligament, cornea
Dermatan sulfate	Pliability of skin, and heart valves, wide distribution
Keratan sulfate	Horny structures like hair, nails, claws, horn, hoofs Also present in cornea
Heparin	Mast cells
Heparan sulfate	Skin fibroblast, aortic wall

369. The mechanism by which mercury causes damage ?

a) Binds to -SH group of enzyme

b) Directly toxic

c) Inhibits ETC

d) Inhibits protein synthesis

Correct Answer - A

Ans. is 'a' i.e., Binds to -SH group of enzyme

- Heavy metal toxicity is caused by tight binding of a metal such as mercury (Hg), lead (Pb), aluminium (Al), or iron (Fe) to a functional group of enzyme.
- Mercury, for example, binds to reactive sulfhydryl groups (-SH) in the active site of so many enzymes, that it has been difficult to determine which of the inhibited enzyme is responsible for mercury toxicity.
- Lead also has high affinity for sulfhydryl group.

370. True regarding collagen synthesis is all except ?

- a) Synthesized in ribosomes as procollagen
- b) Hydroxylation of proline occurs in Golgi apparatus
- c) Hydroxylation of lysine occurs in ER
- d) Triple helix assembly occurs in ER

Correct Answer - B

Ans. is 'b' i.e., Hydroxylation of proline occurs in Golgi apparatus

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371. Type of collagen found in space of Disse in liver is -

a) Collagen I & II

b) Collagen III & IV

c) Collagen II &

d) Collagen II & V

Correct Answer - B
Ans. is 'b' i.e., Collagen III & IV

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372. Albumin binds with all except ?

a) Steroid

b) Calcium

c) FFA

d) Thyroxine

Correct Answer - D

Ans. is ' d ' i.e., Thyroxine

- Albumin is involved in transport of several substances because of its predominantly polar nature.
- Nearly 40% of plasma calcium is bound-up with albumin.
- Other substances which are Bound-up and/or transported by albumin are :?
 1. Free fatty acids
 2. Bilirubin
 3. Steroids
 4. Many nonpolar drugs

Coming back to question

- Thyroxine also binds to albumin, but it is not the major transport protein for thyroxine. Most of the thyroxine is transported by globulin.
- Thyroxine binding plasma proteins are :-
 1. Thyroxine binding globulin Major thyroid hormone binding protein
 2. Thyroxine binding albumin
 3. Thyroxine binding pre-albumin
- Thus, among the given options, thyroxine is the best answer.

373. Which collagen produces sheets ?

a) I

b) II

c) IV

d) VI

Correct Answer - C

Ans. is 'c' i.e., IV

- Various structure produced by collagens

Fibrils	Sheets	Beaded filaments	Anchoring fibrils

Collagen I	Collagen IV	Collagen VI	Collagen VII

Collagen II	Collagen VIII		

Collagen III	Collagen X		

Collagen V			

Collagen XI			

374. Main enzyme for glycogen metabolism ?

a) Glucose-6-phosphatase

b) Glycogen synthase

c) PFK - 1

d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Glycogen synthase

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375. Which of the following is seen in young's syndrome ?

a) Azoospermia

b) Bronchiectasis

c) Infertility

d) All of the above

Correct Answer - D

Answer- D. All of the above

Young's syndrome is characterized by :

- 1. Bronchiectasis
- 2. Azoospermia & infertility
- 3. Sinusitis
- 4. Nasal polypi

376. Amyloidosis occurs in all except

a) Tuberculosis

b) Chronic bronchitis

c) Osteomyelitis

d) Bronchiectasis

Correct Answer - B

Answer- B. Chronic bronchitis

Secondary amyloidosis

It occurs secondary to an associated inflammatory conditions like

1. Rheumatoid arthritis (most common)
2. TB & Leprosy
3. Ankylosing spondylitis
4. Chronic osteomyelitis
5. IBD (crohn disease, ulcerative colitis)
6. Bronchiectasis

It may also occur in some tumors

1. Renal cell carcinoma (Hypernephroma)
2. Hodgkin lymphoma

377. Most common cause of death in SLE in children

a) Lupus nephritis

b) Lupus cerebritis

c) Libman Sacks endocarditis

d) Anemia and infections

Correct Answer - A

Answer- A. Lupus nephritis

Major causes of death in pediatric SLE include :

1. Renal disease (lupus nephritis)
2. Severe disease flare
3. Infections

378. Small posterior fossa seen in ?

a) Arnold chiari malformation

b) Dandy walker

c) Medulloblastoma

d) Schizencephaly

Correct Answer - A

Answer- A. Arnold chiari malformation

Small posterior fossa → arnold chiari malformation.

Large posterior fossa → dandy walker malformation

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379. Which of the following is a Channelopathy

a) Ataxia Telangiectasia

b) Frederich Ataxia

c) Spinocerebellar ataxia

d) Anderson Tawil Syndrome

Correct Answer - D

Ans. is 'd' i.e., Anderson Tawil Syndrome

- Anderson syndrome (Anderson-Tawil syndrome) is a potassium channel channelopathy.

380. Incorrect about HIV associated nephropathy ?

- a) Proteinuria
- b) Shrunken kidneys
- c) 15% cases show mesangial proliferation
- d) Develops when CD4<200

Correct Answer - B

Answer- B. Shrunken kidneys

Most common (80%) kidney lesion in AIDS is FSGS (especially collapsing variant i.e. collapsing glomerulopathy). It is termed as HIV associated nephropathy (HIVAN).

Mesangioproliferative (mesangial proliferation) GN is 2nd most kidney lesion

Other kidney lesions are diffuse proliferative GN, MPGN, IgA nephropathy, membranous GN and minimal change disease.

381. The sign of reversible injury in a case of alcoholic liver disease -

a) Loss of cell membrane

b) Nuclear karyolysis

c) Cytoplasmic vacuole

d) Pyknosis

Correct Answer - C

Ans. is 'c' i.e., Cytoplasmic vacuole

o Fatty changes occur in alcoholic steatosis (fatty liver). It is manifested by appearance of *lipid vacuole in the cytoplasm*, which is a sign of *reversible injury*.

o Other three options (loss of cell membrane, nuclear karyolysis and pyknosis) are signs of irreversible injury

382. Organelle where H_2O_2 is produced and destroyed is?

a) Peroxisome

b) Lysosome

c) Golgi body

d) Ribosome

Correct Answer - A

Ans. is 'a' i.e., Peroxisome

- Peroxisome is a membrane bound organelle found in all eukaryotic cells.
- "Peroxisomes contain a group of enzymes that oxidize a variety of substrates and thereby form hydrogen peroxide. The H_2O_2 thus formed is efficiently decomposed within the organelle by catalase which is present in high concentration".
- Lysosomes can only form H_2O_2 - They cannot degrade H_2O_2 .

Remember

- H_2O_2 is produced as well as destroyed in mitochondria and cytosol.
- It is produced from superoxide by enzyme SOD.
- It is destroyed by glutathione peroxidase.

383. Eosinophilia in necrosed tissue is due to

- a) Coagulation of proteins
- b) Denaturation of enzymes
- c) Denaturation of protein
- d) Mitochondrial damage

Correct Answer - C

Ans. is 'c' i.e., Denaturation of protein

- Necrotic cells show increased eosinophilia in *hematoxylin and eosin (H & E) stains*.
- It is due to -
 1. Loss of cytoplasmic RNA (or ribonucleoprotein/RNP) which binds the blue dye, hematoxylin.
 2. Denatured cytoplasmic proteins which bind the red dye, eosin.

384. Gaseous necrosis is seen in -

- a) CMV infection
- b) Staphylococcal infection
- c) Treponemal infection
- d) HSV infection

Correct Answer - C

Ans. is 'c' i.e., Treponemal infection [Ref Robbin's 9th ed p. 43; Anderson's 10th ed p. 375]

- Caseous necrosis is a feature of syphilis which is caused by treponemal infection.
- Gaseous necrosis**
- It is a variant of coagulative necrosis. It is most commonly encountered when cell death is attributable to certain organisms
 - e.g., mycobacterium tuberculosis (TB), syphilis and fungi (Histoplasma, Coccidioidomycosis).

385. Type of necrosis in pancreatitis ?

a) Fibrinoid

b) Coagulative

c) Fat

d) Caseous

Correct Answer - C

Ans. is 'c' i.e., Fat

- Fat necrosis is seen most frequently in acute pancreatitis due to leakage of lipase.

Fat necrosis

- Fat necrosis may be of two types : ?
 1. Enzymatic fat necrosis
- This is due to action of lipase on adipose tissue.
- It occurs most frequently in acute pancreatitis due to leakage of lipase.
- Depending on the severity of acute pancreatitis, fat necrosis may occur in : - a Adipose tissue contiguous to pancreas, retroperitoneal fat.
- Adipose tissue in anterior mediastinum.
- Bone marrow
- Omental and abdominal fat
- 2. Nonenzymatic or Traumatic fat necrosis
- Occurs due to trauma
- Is seen in subcutaneous tissue of breast, thigh, and abdomen.

386. Example of Apoptosis is?

a) Councilman Bodies

b) Gamma Gandy Body

c) Russell bodies

d) None

Correct Answer - A

Ans. is 'a' i.e., Councilman bodies

Apoptotic body

- One of the morphological hallmark of apoptosis is the apoptotic body which is eosinophilic and may contain some karyorrhectic nuclear debris.
- It is a result of shrinkage of cytoplasm and nuclear disruption.
- First there is surface blebbing and margination of chromatin which is followed by cell shrinkage and breakup into smaller apoptotic bodies.
- These apoptotic bodies are taken up by surrounding cells and digested.
- Since the process was seen for a long time before the mechanism was understood, apoptotic bodies in particular situations attracted specific names:
 1. Civatte bodies or colloid bodies in lichen planus.
 2. Kamino bodies in melanocytic lesions
 3. Councilman bodies in acute viral hepatitis
 4. Tingible bodies (found in macrophages) in lymphoma
 5. Sunburn cells
 6. Satellite dyskeratotic cells
 7. Eosinophilic globules

387. Dystrophic calcification is seen in ?

- a) Milk alkali syndrome
- b) Atheromatous plaque
- c) Hyperparathyroidism
- d) Vitamin A intoxication

Correct Answer - B

Ans. is 'b' i.e., Atheromatous plaque

Dystrophic calcification

* When pathological calcification takes place *in dead, dying or degenerated tissue*, it is called dystrophic calcification. o Calcium metabolism is not altered and *serum calcium level is normal*.

Dystrophic calcification in dead tissues

1. In caseous necrosis of tuberculosis (most common which may be in lymph nodes)
2. Chronic abscess in liquefactive necrosis
3. Fungal granuloma
4. Infarct
5. Thrombi
6. Haematomas
7. Dead parasites- Cystecercosis/Toxoplasma Hydatid/Schistosoma
8. In fat necrosis of breast & other tissues

Dystrophic calcification in degenerated tissues

1. Atheromatous plaque
2. Monckeberg's sclerosis
3. Psommama bodies
4. Dens old scars
5. Senile degenrated changes such as in costal cartilage, tracheal, bronchial rings, Pineal gland in brain.
6. Heart valves damaged by rheumatic fever.

How does calcification occurs in these site with normal serum calcium ?

- * Calcification of dead and dying cells and tissues is a common finding in human pathologic conditions.
- * Denatured proteins in dead or irreversible damaged tissues preferentially bind phosphate ions.
- * Phosphate ions react with calcium ions to form a precipitate or calcium phosphate.
- * Thus, necrotic tissue serves as a calcium sink.

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388. Which of the following is labile cell ?

- a) Cardiac cell
- b) Liver parenchymal cell
- c) Vascular endothelial cells
- d) Surface epithelium

Correct Answer - D

Ans. is 'd' i.e., Surface epithelium

- When a cell proliferates, it pass through a cell cycle.

Cell cycle has a series of phases :

G phase → Rest phase (Presynthetic phase)

S phase → Synthetic phase in which synthesis of DNA takes place.

G₂phase → Resting phase (Postsynthetic or postmitotic phase).

M phase → Mitotic phase in which mitosis takes place.

Go phase → When cell is not proliferating, it remains in quiescent phase (Go). Based on their proliferative capacity, cells are divided into S Go G,

1. Labile cells (Continuously dividing cells) or intermitotic cells.

- Have capacity to proliferate and regenerate.
- Have very short Go and almost always remain in cell cycle. Example are : -
- Surface epithelium (stratified squamous) of skin, oral cavity, vagina and cervix.
- Lining mucosa of all excretory ducts of glands (Salivary gland, pancreas, biliary duct).
- Columinar epithelium of GIT and uterus.
- Transitional epithelium of the urinary tract.

- Bone marrow cells and hematopoietic cells.
- Basal cells of epithelia.

2 . Stable or quiescent or reversible postmitotic cells.

- Have limited capacity to proliferate and regenerate.
- Remain in G₀ phase of cell cycle but can enter in G₁ phase when stimulated i.e., they usually remain quiescent, but proliferate in response to stimuli. Example are -
- Parenchymal cells of liver, kidney and pancreas.
- Mesenchymal cells, e.g., fibroblast and smooth muscles.
- Vascular endothelium
- Osteoblast, chondroblast
- Resting lymphocytes and other leukocytes.

3. Permanent or nondividing or irreversible postmitotic cells.

- Cannot divide and regenerate.
- These cells are nondividing and have left the cell cycle, i.e., they do not belong to any phase of cell cycle. Example are -
- Li Neurons
- Cardiac muscle
- Skeletal muscle

389. Changes seen in atherosclerotic plaque at the time of rupture are all except -

- a) Thin fibrosis cap
- b) Multiple foam cap
- c) Smooth muscle cell hypertrophy
- d) Cell debris

Correct Answer - C

Ans. is 'c' i.e., Smooth muscle cell hypertrophy

- Rupture occurs in advanced atherosclerotic lesion.
- In advanced atheroma, smooth muscle cells undergo apoptosis and advanced atheromatous plaque often have mostly fibrous character with *lack of smooth muscle cells* that are seen in less advanced lesion.

390. Which of the following is a non-modifiable risk factor for CHD -

a) Diabetes

b) Smoking

c) Hypertension

d) Old age

Correct Answer - D

Ans. is 'd' i.e., Old age

- .. Old age is a non-modifiable risk factor for atherosclerosis and coronary heart disease (CHD).
- 2. Other three (given in question) are modifiable risk factors.

391. Heart failure cells are ?

- a) Lipofuscin granules in cardiac cells
- b) Pigmented alveolar macrophages
- c) Pigmented pancreatic acinar cells
- d) Pigment cells seen in liver

Correct Answer - B

Ans. is 'B' i.e., Pigmented alveolar macrophages

- Heart failure cells (siderophages) are hemosiderin containing macrophages in alveoli that are seen in left ventricular failure and denote previous episodes of pulmonary edema.

Left sided heart failure

- The major morphological and clinical effects of LVF are due increased back pressure in pulmonary circulation and the consequences of diminished peripheral blood pressure and flow.
- The extracardiac organs involved commonly are ?
 1. Lung (most common)
 2. Kidney
 3. Brain

Lung

- Pressure in the pulmonary veins increases and transmitted retrogradely to capillaries and arteries.
- This results in *pulmonary congestion* and *pulmonary-edema* → *Wet lung*.
- There is perivascular and interstitial transudate, particularly in the interlobular septa responsible for Kerley's 'B' lines on X-rays.
- Edematous fluid accumulates in alveoli.
- Iron containing proteins and hemoglobin leak out from the capillaries, and are phagocytosed by macrophages and converted to

hemosiderin.

- Hemosiderin - containing macrophages in the alveoli (called siderophages, or heart failure cells) denote previous episodes of pulmonary edema.
- The clinical manifestations of LVF are primarily due to these changes in lungs → Dysnea, orthopnea, paroxysmal nocturnal dysnea.

Kidney

- Decreased cardiac output causes a reduction in renal perfusion.
- If it is severe enough to impair the excretion of nitrogenous product (BUN, Creatinine), Prerenal ARF (Prerenal azotemia) may be precipitated.

Brain

- Reduced perfusion to brain may cause hypoxic / ischemic encephalopathy.

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392. Irreversible injury in myocardium occurs at ?

a) 2 minutes

b) 30 minutes

c) 2 hours

d) 5 hours

Correct Answer - B

Ans. is 'b' i.e., 30 minutes

- The metabolic rate of the heart is high, and its stores of substrate are low.
- So, heart is critically dependent on a continuous supply of oxygen and nutrients.
- Ischemia of myocardium induces profound functional, biochemical and morphological consequences.
- *Myocardial function is more sensitive to ischemia* (loss of contractility occurs within 60 seconds) than myocardial structure (irreversible injury occurs in 20-40 minutes, thus myocardial necrosis begins at approximately 30 minutes after coronary occlusion).

Key events in ischemic cardiac myocytes

Feature	Time
Onset of ATP depletion	Seconds
Loss of contractility	< 2 minutes
ATP reduced to 50%	10 minutes
ATP reduced to 10%	40 minutes
Irreversible injury	20-40 min
Microvascular injury	> 1 hr

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393. Hyperplastic arteriolitis with necrotizing arteriolitis is seen in ?

- a) Buerger's disease
- b) Benign hypertension
- c) Malignant hypertension
- d) Diabetes

Correct Answer - C

Ans. is 'c' i.e., Malignant hypertension

- Hyperplastic arteriosclerosis is characteristically pathologic change seen in vessels of the patient suffering from malignant hypertension.
- Arterioles of all the organs in the body can be affected but favoured sites are
 1. Kidney
 2. Small Intestine
 3. Gall bladder
 4. Peripancreatic fat
 5. Periadrenal fat.

394. Earliest histological change in MI -

a) Macrophage infiltration

b) Neutrophilic infiltration

c) Waviness of fibers

d) Coagulative necrosis

Correct Answer - C

Ans. is 'c' i.e., Waviness of fibers

- Variable waviness of fibres at border is the earliest histological finding (see tables of previous explanation).

395. Syphilitic aneurysm mostly involve ?

a) Arch of aorta

b) Descending aorta

c) Abdominal aorta above the renal arteries

d) Abdominal aorta below the renal arteries

Correct Answer - A

Ans. A. Arch of aorta

The ascending aorta is the segment most commonly affected (50%), followed by the arch (35%) and the descending aorta (15%)

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396.

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Classification of aortic dissection depends upon?

- a) Cause of dissection
- b) Level of aorta affected
- c) Percentage of aorta affected
- d) None

Correct Answer - B

Ans. is 'b' i.e., Level of aorta affected

Classification of Aortic dissection

- The risk and nature of serious complications of dissection depend strongly on the level of aorta affected, with the most serious complications occurring from the aortic valve to the arch.
- Thus aortic dissections are generally classified into two types ?
Proximal lesion (Type A)
 - More common and more dangerous.
 - Involve either the ascending portion only or both ascending and the descending portion of aorta.
- **Distal lesion (Type B)**
 - Involve only descending part distal to subclavian artery.

397. Creatinine kinase is elevated in MI after -

a) 2 - 4 hrs.

b) 4 - 8 hrs.

c) 12 - 24 hrs

d) > 24 hrs.

Correct Answer - A

Ans. is 'a' i.e., 2 - 4 hrs

Enzyme	Initiation of rise	Peak	Return to baseline
CK-MB	2-4 hours	24 hours	48-72 hours
Troponin T and I (TnT TnI)	2-4 hours	48 hours	7-10 days
AST/SGOT	In 12 hours	48 hours	4-5 days
LDH	24 hours	3-6 days	2 weeks

398. Which is not seen in Aschoff bodies -

a) Giant cells

b) Aschoff cells

c) Fibroblasts

d) Polymorphonuclear cells

Correct Answer - D

Ans. is d i.e., Polymorphonuclear cells

Aschoff bodies :

* Aschoff bodies are focal inflammatory lesions seen during acute rheumatic fever

* They consist of foci of swollen eosinophilic collagen surrounded by Lymphocytes (primarily T cells)

Occasional plasma cells

Aschoff giant cells (macrophages of rheumatic fever)

Antischkow cells

(Antischkow cells are modified macrophages with abundant cytoplasm and central round to ovoid nuclei in which the chromatin is disposed in the central, slender wavy ribbon like pattern-caterpillar cells)

Histiocytes

Fibroblasts

399. All are true about non-bacterial thrombotic endocarditis, except ?

- a) Cause emboli
- b) Vegetation > 5 mm
- c) No inflammatory reaction
- d) Locally nondestructive

Correct Answer - B

Ans. is 'b' i.e., Vegetation > 5 mm

Nonbacterial thrombotic endocarditis (NBTE)

- NBTE is characterized by the deposition of small sterile thrombi on the leaflets of the cardiac valves.
- The lesions are small, ranging from 1 mm to 5 mm.
- They occur singly or multiply along the lines of closure of leaflet or cusps.
- They are composed of bland thrombi that are loosely attached to the underlying valve.
- The vegetations are not invasive and do not elicit any inflammatory reaction. Thus, the local effect of vegetations is usually unimportant but they may be the source of systemic emboli.
- NBTE is often encountered in debilitated patients. It is seen in hypercoagulable states, e.g. cancer, promyelocytic leukemia, mucinous adenocarcinomas and increased estrogenic state.

400. Concentric hypertrophy of left ventricle is seen in?

a) Mitral stenosis

b) Hypertension

c) Aortic regurgitation

d) None

Correct Answer - B

Ans. is 'b' i.e., Hypertension

- Concentric hypertrophy → In pressure overload, e.g. hypertension and aortic stenosis.
- Eccentric hypertrophy → In volume overload, e.g. in aortic regurgitation.

Adaptations in heart

- The cardiac myocyte is terminally differentiated cell that is not able to divide.
- Myocardium cannot undergo hyperplasia, i.e. increase in the number of myocyte.
- So, myocardium can adapt by increasing the size (i.e. hypertrophy) of the myocyte in response to stress.
- There are two types of stresses to heart

1. Pressure overload

- Occur in hypertension or aortic stenosis.
- Pressure overloaded ventricles develop concentric hypertrophy of the left ventricle, with increased in wall thickness → Heart size may increase.
- The increase in wall thickness may reduce the cavity diameter --> ratio of cavity size to wall thickness decreases.
- There is increase in the transverse diameter (width) of myocytes, but cell length remains the same.

2. Volume overload

- As occurs in aortic regurgitation
- There is dilatation of ventricular chamber along with increased thickness of ventricular wall → Eccentric hypertrophy.
- There is increase both in the transverse diameter (width) and the length of myocytes.
- It is due to deposition of the sarcomeres (functional intracellular contractile unit of cardiac muscles) in parallel to the long axis of cells.

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401. Fibrinoid necrosis with neutrophilic infiltration is seen in ?

a) PAN

b) Giant cell arteritis

c) Takayasu arteritis

d) Wegener's granulomatosis

Correct Answer - A

Ans. is 'a' i.e., PAN

- Among the given options, PAN is predominantly *necrotizing vasculitis*, characterized by **fibrinoid necrosis**.
- During acute phase of **PAN**, there is **transmural inflammation** with mixed infiltrate of **neutrophils**, eosinophils and mononuclear cells with accompanied **fibrinoid necrosis**.
- Other three options are predominantly **granulomatous vasculitis**.

402. Thromboangitis obliterans is associated with ?

a) HLA B27

b) HLA - DR4

c) HLA - B5

d) HLA - DR2

Correct Answer - C

Ans. is 'c' i.e., HLA - B5

Thromboangitis obliterans (Berger disease)

- Thromboangitis obliterans is a distinctive disease that is characterized by segmental, thrombosing acute and chronic inflammation of medium sized and small sized arteries, and sometimes secondarily extending to veins and nerves.
- Thromboangitis obliterans occurs almost exclusively among heavy-cigarette-smoking persons.
- It is more common in men but incidence is increasing in women because of increasing smoking habit in women. o Buerger disease is associated with HLA B-5 and HLA-A9.
- In thromboangitis obliterans there is acute and chronic segmental inflammation of vessels with accompanied thrombosis in the lumen.
- Typically, the thrombus contains microabscesses with a central focus of neutrophils surrounded by granulomatous inflammation.
- Later, the inflammatory process extends into contiguous veins and nerves and in time all three structures (arteries, veins and nerves) become encased in fibrous tissue, a characteristic that is very rare with other form of vasculitis.
- Clinical manifestations
- Thromboangitis obliterans affects vessels of upper and lower

extremities.

- Symptoms are due to vascular insufficiency, i.e. Ischemia of toes, feet and fingers that can lead to ulcer and frank gangrene.
- Due to neural involvement, there may be severe pain, even at rest.

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403. True regarding fibromuscular dysplasia are all except -

- a) Medium size vessels
- b) OCPs predispose
- c) Aneurysm may occur
- d) Irregular hyperplasia

Correct Answer - B

Ans. is 'b' i.e., OCPs predispose

Fibromuscular dysplasia

- It is focal irregular thickening of the walls of medium and large muscular arteries, including renal, carotid, splanchnic, and vertebral vessels.
- Segments of vessel wall are focally thickened by a combination of irregular medial and intimal hyperplasia and fibrosis, causing luminal stenosis. In renal vessels, it may cause renovascular hypertension.
- Aneurysm may develop in the vessel segment with attenuated media, and can rupture in some cases.
- There is no association with use of oral contraceptives or sex hormone abnormalities.

404. Sequence of events in acute inflammation ?

a) Vasodilatation → Stasis → Transient vasoconstriction
→ Increased permeability

b) Transient vasoconstriction → Stasis → Vasodilatation →
Increased permeability

c) Transient vasoconstriction → Vasodilatation → Stasis
→ Increased permeability

d) Transient vasoconstriction → Vasodilatation → Increased
permeability → Stasis

Correct Answer - D

Ans. is 'd' i.e., Transient vasoconstriction → Vasodilatation
→ Increased permeability → Stasis

1) *Changes in vascular caliber (vasodilatation)*

- *Vasodilatation is one of the earliest manifestations of acute inflammation.*
- Sometimes, it follows a *transient constriction* of arterioles, (vasoconstrictions) lasting for a few seconds -
> *Though vasodilatation is the earliest manifestation of acute inflammation, it follows a transient period of vasoconstriction.*
- 2) *Change in vascular permeability*
- Vasodilatation is quickly followed by increased vascular permeability.
- *Increased vascular permeability is the hallmark of acute inflammation.*
- *This leads to escape of protein rich fluid (exudate) and leukocytes into extravascular space*
- 3) *Change in vascular flow (Stasis)*
- The loss of fluid results in concentration of red cells and increased

viscosity of blood - Slower blood flow - Stasis.

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405. Increased permeability in acute inflammation is due to-

a) Histamine

b) IL-2

c) TGF-P

d) FGF

Correct Answer - A

Ans. is 'a' i.e., Histamine

* *Formation of endothelial gaps in venules, i.e. immediate transient response* is the most common mechanism causing increased vascular permeability in acute inflammation.

* Mediators involved in this mechanism are :-

i) Immediate (more important) : Histamine, bradykinin, leukotrienes, neuropeptide substance P. Somewhat delayed : IL-1, TNF, IFN-γ

406. During angiogenesis recruitment of pericytes and periendothelial cells is due to

a) VEGF & PDGF

b) Angiopoietins, TGF & PDGF

c) TGF, VEGF & PDGF

d) VEGF, IL-6

Correct Answer - B

Ans. is 'b' i.e., Angiopoietins, TGF & PDGF

Angiogenesis

- Blood vessels formation in adults is known as *angiogenesis* or *neovascularization*. It can occur by two ways:?
 - 1. Angiogenesis from pre-existing blood vessels**
 - The major steps in this process are :?
 - Vasodilatation by NO, and VEGF-induced increased permeability of the pre-existing vessel.
 - Proteolytic degradation of basement membrane by metalloproteinases (MMPs) and disruption of cell-to-cell contact between endothelial cells by plasminogen activator.
 - Migration of endothelial cells towards angiogenic stimulus.
 - Proliferation of endothelial cells, just behind the leading front of migrating cells.
 - Maturation of endothelial cells.
 - Recruitment of periendothelial cells (pericytes and vascular smooth muscle cells) to form the mature cells.
 - 2. Angiogenesis from endothelial precursor cells (EPCs)**
 - EPCs can be recruited from the bone marrow into tissues to initiate

angiogenesis.

- Growth factors involved in the process of angiogenesis
- VEGF is the most important growth factor in adult tissues undergoing angiogenesis.
- The most important receptor for VEGF is VEGFR-2, a tyrosine kinase receptor.
- VEGF induces the migration of EPCs in the bone marrow, and enhances the proliferation and differentiation of these cells at sites of angiogenesis.
- FGF 2 can also stimulate endothelial cell proliferation, differentiation and migration.
- Newly formed vessels are fragile and need to become stabilized, which requires the recruitment of pericytes and smooth muscle cells (periendothelial cells). Angiopoietin **1 and 2** (Ang **1 & 2**), PDGF and TGF- β 3 participate in stabilization process.

Remember

- VEGF transcription is regulated by the transcription factor **HIF**, which is induced by hypoxia.

407. Increased permeability in acute inflammation is due to?

a) Histamine

b) IL-2

c) TGF-(3

d) FGF

Correct Answer - A

Ans. is 'a' i.e., Histamine

- Formation of endothelial gaps in venules, i.e. immediate transient response is the most common mechanism causing increased vascular permeability in acute inflammation.
- Mediators involved in this mechanism are :-
- Immediate (more important) : Histamine, bradykinin, leukotrienes, neuropeptide substance P.
- Somewhat delayed: IL-1, TNF, IFN- γ

408. Macrophages are converted to epithelioid cells by which cytokine ?

a) IL-2

b) IFN- γ

c) TNF- α

d) TGF- β

Correct Answer - B

Ans. is 'b' i.e., IFN- γ

- A granuloma is a focus of chronic inflammation consisting of a microscopic aggregation of macrophages that are transformed into epithelium like cells (epithelioid cells) surrounded by a collar of mononuclear leukocytes, principally lymphocytes and occasionally plasma cells.
- Frequently, these epithelioid cells fuse to form giant cells in the periphery or some times in the center of granuloma.

Pathogenesis of granuloma

- Immune granuloma (most common type of granuloma) is a type IV hypersensitivity that involved CD-4 helper T cell.
- On-exposure to particulate antigen macrophages process and present this antigen to Helper T cells and also secrete IL-2.
- T-cells are activated on contact with this antigen and by IL-2.
- Activated T-cells (helper) produce IFN- γ , the major cytokine of granulomatous inflammation.
- IFN- γ has the following effects
 - It is the most important activator of macrophages.
 - It induce granuloma formation by conversion of activated macrophages into epithelioid cells and formation of giant cell.
 - Augment the differentiation of T-cells.

- Finally there is formation of granuloma induced by IFN- γ .
Remember
- Foreign body (Nonimmune) granuloma consist almost entirely of epithelioid cells and multinucleated giant cells but no lymphocytes.
- Granulomas induced by parasites contain a large component of eosinophils.
- In lymphogranuloma venerum and Cat scratch disease granulomas have a characteristic central neutrophilic abscess surrounded by macrophages and other mononuclear cells.

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409. Resolution of inflammation caused by ?

- a) TNF Alfa, IL-1 and CRP
- b) TNF beta, IL-6 and CRP
- c) TNF Alfa, IL 10 and IL 1 receptor antagonist
- d) TNF gamma

Correct Answer - C

Ans. is 'c' i.e., TNF Alfa, IL-10 and IL 1 receptor antagonist

Actually no option is absolutely correct:

- IL-10 is an anti-inflammatory cytokine Cause resolution of inflammation
- IL-1 is a pro-inflammatory cytokine → IL-1 receptor antagonism will cause resolution of inflammation
- TNF- α is an pro-inflammatory cytokine → causes inflammation
- So, in option C, two mediators are correct and one is incorrect regarding resolution of inflammation. However, among the given options only option C is the closest one.
- Proinflammatory cytokines
- Major :- *IL-1*, TNF- α , *IL-6*
- Other :- *IL-2*, *IL-4*, *IL-5*, *IL-6*, *IL-8*, *IL-11*, *IL-12*, *IL-15*, *IL-21*, *IL-23*, ITN- γ , GM-CSF
- Anti-inflammatory cytokines
- *IL-4*, *IL-10*, *IL-13*
- Here, you can consider *IL-4* as pro-inflammatory cytokine (as more than one options can be correct in PGIchandigarh).

410. Cytokine causing fever -

a) IL-6

b) IFN- γ

c) IL-18

d) IL-4

Correct Answer - A

Ans. is 'a' i.e., IL-6

Pyrogenes

- Pyrogenes are substances that cause fever.
- Pyrogens may be exogenous or endogenous
- Exogenous → Bacterial toxins
- Endogenous → IL-1, TNF- α , IL-6, Interferons, Ciliary's neurotropic factor
- These pyrogenes increase the level of PGE₂ in the hypothalamus that elevates the thermoregulatory set point and causes fever.

411. False about wound healing ?

- a) Inhibited by infection
- b) Inhibited by DM
- c) Inhibited by hematoma
- d) Inhibited by foreign body

Correct Answer - C

Ans. is 'c' i.e., Inhibited by hematoma

Factors causing impairment of wound healing

A. Systemic factors

- Poor nutrition (protein deficiency, vitamin C deficiency).
- Metabolic abnormalities (*Diabetes mellitus*).
- Poor circulatory status (Inadequate blood supply).
- Hormones, e.g. glucocorticoids.

B. Local factors

- Infection is the single most important factor.
- Mechanical factors, e.g. early mobilization.
- Foreign bodies (unnecessary sutures, fragments of steel or glass).
- Wound in poorly vascularized area, e.g. foot.

412. Band test is done in ?

a) RA

b) SLE

c) Scleroderma

d) PAN

Correct Answer - B

Ans. is 'b' i.e., SLE

Band test (Lupus band test)

- Lupus band test is done upon skin biopsy, with direct immunofluorescence staining, in which, if positive, IgG and complement depositions are found at the dermoepidermal junction. This test can be helpful in distinguishing systemic lupus erythematosus (SLE) from cutaneous lupus, because in SLE the lupus band test will be positive in both involved and uninvolved skin, whereas with cutaneous lupus only the involved skin will be positive.
- The minimum criteria for positivity are:
- In sun-exposed skin : Presence of a band of deposits of IgM along the epidermal basement membrane in 50% of the biopsy, intermediate (2+) intensity or more.
- In sun protected skin : Presence of interrupted (i.e. less than 50%) deposits of IgM along the epidermal basement membrane, intermediate (2+) intensity or more.
- The presence of other immunoglobulins (especially IgA) and/or complement proteins (especially C4) increases the specificity of a positive test.

413. The professional antigen presenting cells ?

a) B cells

b) Dendritic cells

c) T cells

d) NK cells

Correct Answer - B

Ans. is 'b' i.e., Dendritic cells

- Dendritic cells are the most potent and effective antigen presenting cells in the body - Harrison 2024 Mature B-cells and T-cells before antigenic exposure are called naive-B and T cells respectively.
- Sequence of events in activation of naive T cells.
- Immature dendritic cells in the epidermis are called langerhans cell.
- These immature dendritic cells (langerhans cells) capture the antigen in the epidermis.
- After capturing the antigen these cells secrete cytokines.
- These cytokines cause loss of adhesiveness of langerhans cells.
- Langerhans cells separate from each other and migrate into lymphatic vessels.
- In lymphatic vessel, maturation of langerhans cells takes place.
- Then these mature langerhans dendritic cells reach to naive T cells in the lymph nodes and present antigen to these cells and activate them.

414. Which cytokine activate macrophages ?

a) IL-8

b) IFN- γ

c) PAF

d) Leukotriene B₄

Correct Answer - B

Ans. is 'b' i.e., IFN- γ

Activated macrophages

- Recent studies show that there are two types of activated macrophages : ?
 1. Classically activated macrophages (M1)
 - These are activated by microbial products and cytokines like IFN- γ .
 - These cells release lysosomal enzymes, NO, IL-1, and IL-12.
 - These cells are involved in microbicidal activities and pathogenic inflammation.
 2. Alternatively activated macrophages (M2).
 - These cells are activated by microbial products and cytokines like IL-4, IL-5.
 - These cells release IL-10, TGF- β .
 - These cells are involved in anti-inflammatory actions and wound repair.

415. All are true regarding transforming growth factor? p except-

- a) Proliferation for fibroblast
- b) Proliferation of endothelial cells
- c) Chemotaxis of fibroblasts
- d) Activation of macrophages

Correct Answer - D

Ans. is 'd' i.e., Activation of macrophages

Also see above explanation.

Growth factors and cytokines involved in regeneration and wound healing

Growth factor Epidermal growth a

Transforming growth factor a

Heparin-binding EGF

Hepatocyte growth factor/scatter factor

Vascular endothelial cell growth factor (isoforms A,B,C,D)

Platelet-derived growth factor (isoforms A,B,C,D)

Fibroblast growth factor 1 (acidic), 2 (basic), and family

Transforming growth factor 13 (isoforms 1,2, 3); other members of the family are BMPs and activin

Functions

Mitogenic keratinocytes and fibroblasts; stimulates keratinocyte migration and granulation tissue formation

Similar to EGF; stimulates replication of hepatocytes and most epithelial cells

Keratinocyte replication

Enhances proliferation of hepatocytes, epithelial cells, and endothelial cells; increases cell motility, keratinocyte replication

Increases vascular permeability; mitogenic for endothelial cells; angiogenesis

Chemotactic for PMNs, macrophages, fibroblasts, and smooth muscle cells; activates PMNs, macrophages and fibroblasts; mitogenic for fibroblasts, endothelial cells, and smooth muscle cells; stimulates production of MMPs, fibronectin, and HA; stimulates angiogenesis and wound contraction

Chemotactic for fibroblasts; mitogenic for fibroblasts and keratinocytes; stimulates keratinocyte migration, angiogenesis, wound contraction and matrix deposition

Chemotactic for PMNs, macrophages, lymphocytes fibroblasts and smooth muscle cells; stimulates TIMP synthesis, angiogenesis and fibroplasia; inhibits production of MMPs and keratinocyte proliferation

Keratinocyte growth Ka

Fibroblasts Stimulates keratinocyte migration, proliferation factor (also called and differentiation FGF-7)

Tumor necrosis factor TNF Macrophages mast cells, Activates macrophages; regulates other cytokines, multiple functions T lymphocytes

416. HLA is located on ?

a) Short arm of chr-6

b) Long arm of chr-6

c) Short arm of chr-3

d) Long arm of chr-3

Correct Answer - A

Ans. is 'a' i.e., Short arm of chr- 6

- HLA complex (MHC) gene is located on the short arm of chromosome 6.
- The histocompatibility antigens (human leukocyte antigens - HLA) are cell surface antigens that induce an immune response leading to rejection of allografts.
- The principal physiologic function of the cell surface histocompatibility molecules is to bind peptide fragments of foreign proteins for presentation to antigen specific T cells.
- The histocompatibility antigens are encoded by a closely linked multiallelic cluster of genes → Major histocompatibility complex (MHC) or Human leukocyte antigens complex (HLA complex).
- HLA complex of genes is located on the short arm of chromosome 6.

417. Drug induced lupus antibodies are found in ?

a) Anti-Rho

b) Ds-DNA

c) Anti-Sm

d) Anti-histone antibody

Correct Answer - D

Ans. is 'd' i.e., Anti Histone antibody

Drug induced lupus erythematosus

- A lupus like syndrome may develop in patients receiving a variety of drugs.
- Procainamide and hydralazine are most common offenders.
- Most patients do not have symptoms of lupus erythematosus.
- Anti ds DNA antibody is rare
- There is an extremely high frequency of antihistone antibodies.
- Although multiple organs may be affected renal and CNS involvement, usually does not occur.

418. Which antibodies in mother with SLE is responsible for congenital heart disease in child?

a) Anti-histone

b) Anti-Ro & Anti-LA

c) Anti ds DNA

d) Anti-centromere

Correct Answer - B

Ans. is 'b' i.e., Anti-Ro & Anti-LA

Most sensitive

Most specific

antibody against smith (Sm)

Associated with neonatal

lupus and congenital

heart block

Associated with lupus

psychosis

Antinuclear antibody (ANA)

Antidouble stranded antibody and the

Anti Ro, AntiLA antibody

Anti P antibody

419. Xerostomia is seen in all except ?

a) Sjogren syndrome

b) RA

c) Sarcoidosis

d) Midline granuloma

Correct Answer - D

Ans. is 'd' i.e., Midline granuloma

Sjogren syndrome

- Sjogren syndrome is a chronic disease characterized by dry eyes (keratoconjunctivitis sicca) and dry mouth (xerostomia) resulting from immunological mediated destruction of the *lacrimal and salivary glands*. o It occurs in two forms ?
- Primary form (SICCA SYNDROME) → Occurs as an isolated disorder.
- Secondary form When it occurs in association with other autoimmune disorder. It is *more common*.
- o Autoimmune diseases associated with sjogren syndrome
- Rheumatoid arthritis
- Primary biliary cirrhosis
- Thyroiditis
- SLE
- Mixed connective tissue disease
- Sarcoidosis
- Polymyositis
- Vasculitis
- Scleroderma
- Chronic active hepatitis Amongst these, Sjogren syndrome is associated most commonly with RA.

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420. Major fibril protein in Primary Amyloidosis is -

a) AL

b) AA

c) Transthyretin

d) Procalcitonin

Correct Answer - A

Ans. is 'a' i.e., AL

Classification of amyloidosis

o The amyloid can be classified in to following two broad groups ?

1. Systemic (generalised) amyloidosis

When amyloidosis affects more than one body organ or system.

On clinical grounds, the systemic (generalised) amyloidosis is subclassified into ?

A. Primary

- Primary amyloidosis occurs when a specialized cell in the bone marrow (plasma cell) spontaneously produce a particular portion, (i.e. light chain) of antibody AL (*amyloid light chain*).
- It is the *most common type of amyloidosis*.

B. Secondary (Reactive)

- When amyloidosis occurs as a result of underlying chronic inflammatory process, i.e. AA type.
- Other systemic amyloidoses do not fall in either of these categories.

421. Which one of the following stains is specific for Amyloid?

a) Periodic Acid schif (PAS)

b) Alzerian red

c) Congo red

d) Von - Kossa

Correct Answer - C

Ans. is 'c' i.e., Congo Red

- "To differentiate amyloid from other hyaline deposits (eg. Collagen and fibrin), a variety of histochemical techniques are used, of which the most widely used is Congo Red" - Robbins 7th ed p. 259
- Staining for Amyloid
- Congo red : It is the most widely used specific stain for amyloid.
- Iodine staining : It is used for unfixed specimen or histological section. Amyloid stains mahogany brown and if sulfuric acid is added, it turns violet.
- Thioflavin 'T' and 'S' give secondary immunofluorescence with ultraviolet light. Thioflavin T is more useful for demonstrating juxtaglomerular apparatus of the kidney.
- Metachromatic stains like crystal violet and methyl violet give rose pink appearance.
- Amyloid is PAS positive.

422. Gene silencing RNA ?

a) rRNA

b) tRNA

c) miRNA

d) None

Correct Answer - C

Ans. is 'c' i.e., miRNA

- According to recent studies a very large number of genes do not encode proteins. Instead, their products play important regulatory functions.
- The most recently discovered among this class of genes are that encode for gene-silencing RNAs, i.e. RNAs that do not encode proteins but instead inhibit gene expression (unlike classical RNAs which encode for proteins)

Two gene-silencing RNAs are:

1. Micro RNAs (miRNAs)
2. Small interfering RNAs (siRNAs)

1. Micro RNA (miRNAs)

- Because of their profound influence on gene regulation, miRNAs are assuming central importance in understanding normal developmental pathways, as well as pathologic conditions, such as cancer. o By current estimates there are approximately 1000 genes in humans that encode miRNAs.
- Transcription of miRNA gene produces primary miRNA transcripts, which is processed within the nucleus to form another structure, called pre-miRNA.
- Pre-miRNA is transported to cytoplasm by a transportor (Export) protein.

- Dicer (an enzyme) does the additional cutting of this pre-miRNA that are about 21-30 nucleotide in length (hence called "micro").
- At this stage mRNA is still double stranded.
- Next, the miRNA unwinds, and single strands of this duplex are incorporated into a multiprotein complex called RNA-induced silencing complex (RISC).
- Base-pairing between the miRNA strand and its target mRNA (messenger RNA) directs RISC to either cause mRNA cleavage or repress its translation.
- In this way, the gene from which the target was derived is silenced (at a post-transcription level).
- A single miRNA can silence many target genes.

2. Small interfering RNAs (siRNAs)

- siRNAs work in similar manner as miRNA
- Unlike miRNA, siRNA precursors are introduced by investigators into cells.
- siRNA are becoming powerful tools for studying gene function and may in the future be used therapeutically to silence specific genes, such as oncogenes, whose products are involved in neoplastic transformation.

423. Chance of having cystic fibrosis if only one parent is affected and other is normal -

a) 25%

b) 50%

c) 70%

d) 80%

Correct Answer - B

Ans. is 'b' i.e., 50%

Cystic fibrosis is an autosomal recessive disorder. Thus, in the given scenario (question) there are two possibilities:-1) One parent affected and the other is genotypically normal. In this condition, no child will be affected and all will be carrier.

2) One parent affected and the other is genotypically carrier (normal phenotypically). In this condition, 50% of child will be affected

424. Angelman syndrome is due to -

a) Digenic inheritance

b) Inversion

c) Uniparental disomy

d) Mitochondrial disorder

Correct Answer - C

Ans. is 'c' i.e., Uniparental disomy

Prader Willi syndrome

Angelman syndrome

Paternal deletion (Paternal
genomic imprinting)

Maternal deletion (maternal
genomic imprinting)

Maternal uniparental disomy

Paternal uniparental disomy

425. Normal female, whose father was color blind married a normal man. What are the chances of color blindness in son -

a) 25%

b) 50%

c) 75%

d) No chance

Correct Answer - B

Ans. is 'b' i.e., 50%

* Father of the female was color blind, that means she has received mutated X-chromosome from her father and she is carrier for colour blindness.

- If this female gives birth to a male child there is 50% chance that he will get the disease because the carrier female is carrying one normal X-chromosome and one mutated X-chromosome.

Note ?

* Here I would like to mention one important fact that this question has been asked specifically for the chances of disease in a son. The question can be framed in following different ways.

- How many children will have the disease.
- What are the chances of son getting the disease.
- What are the chances of daughter getting the disease.
- How many son will have the disease.

* Thus :?

- 25% of children will have disease.
- 50% of son (1 out of 2) will have disease.
- No daughter will have disease.

iv) Chances that son will have disease is 50% (1 out of 2 male child can get the disease).

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426. All are true about Fragile X syndrome except ?

a) Large head

b) Large nose

c) Large ear

d) Large testis

Correct Answer - B

Ans. is 'b' i.e., Large nose

Fragile - X syndrome

- Fragile - X syndrome is the prototype of diseases in which the mutation is characterized by a long repeating sequence of three nucleotides.
- In fragile X syndrome, trinucleotide repeat mutation involves CGG on non-coding region.
- Clinical features of fragile - X syndrome
 - Mental retardation
 - Long face with large mandible
 - Hyperextensible joint
 - Mitral valve prolapse
 - Large everted ears
 - Large testis (macro-orchidism)
 - High arched palate
- Fragile X syndrome is the second most common cause of mental retardation, after Down's syndrome.

427. Chromosome 22 deletion syndrome is ?

- a) Down syndrome
- b) Di George syndrome
- c) Turner syndrome
- d) Klinefelter syndrome

Correct Answer - B

Ans. is 'b' i.e., Di George syndrome

Chromosome 22q 11.2 deletion syndrome

- This syndrome encompasses a spectrum of disorders that result from a small deletion of *band q 11.2 on long arm of chromosome 22*. Clinical features are considered to represent two different disorders :?

1 Di George syndrome

- These patients have thymic hypoplasia with resultant T-cell immunodeficiency.
- Other features include parathyroid hypoplasia (causing hypocalcemia), cardiac malformations & facial anomalies.
- TBX-1 gene (a T-box transcription factor) is most closely associated with this syndrome. The target of TBX-1 include PAX 9, a gene that controls the development of the palate, parathyroid and thymus.

2 Velo cardio facial syndrome

- This syndrome is characterized by facial dysmorphism (prominent nose, retrognathia), cleft palate, cardiovascular anomalies, and learning disabilities.

428. Hamartoma is-

- a) Malignant tumor
- b) Metastatic tissue
- c) Development malformation
- d) Hemorrhage in vessel

Correct Answer - C

Ans. is 'c' i.e., Development malformation

Hamartoma

A hamartoma is a *benign (noncancerous)* tumor-like growth consisting of a disorganized mixture of cells and tissues normally found in the area of body where the growth occurs.

- * For example, hamartoma of lung contains cartilage, blood vessels, bronchial type of structures and lymphoid tissues.

- * It is a *focal development malformation* that resembles a neoplasm in the tissue of origin.

- * But, it is *not a neoplasm* because it grows at the same rate as the surrounding tissues unlike neoplasm whose growth exceeds the growth of surrounding tissue.

Choristoma

- * Choristoma is the *ectopic rest of normal tissue, i.e.,* the normal tissue is present at a different anatomical site of the body.

- * For example, presence of pancreatic tissue in mucosa of small intestine.

- * Normally arranged tissue at a different anatomical site (ectopic site) --> **Choristoma.**

- * Abnormally arranged tissue present at normal

site

-Hamartoma

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429. All are growth promoting oncogenes except ?

a) FGF

b) TGF- α

c) TGF- β

d) PDGF

Correct Answer - C

Ans. is 'c' i.e. TGF- β

- *Growth factor genes:* SIS, HST-1, INT-2, TGF α , FGF.

430. Tumor suppressor gene is not involved in ?

a) Breast cancers

b) Neurofibromatosis

c) Multiple endocrine neoplasia

d) Retinoblastoma

Correct Answer - C

o Multiple endocrine neoplasia involves RET protooncogene (not tumor suppressor gene).

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431. All are obstructive lung disease except -

a) Emphysema

b) Interstitial fibrosis

c) Asthma

d) Bronchitis

Correct Answer - B

Ans. is 'b' i.e., Interstitial fibrosis

- Diffuse pulmonary diseases are divided into two categories -
Obstructive disease (airway disease)
- Obstructive disease is characterized by an increase in resistance to airflow owing to partial or complete obstruction at any level, from the trachea to the respiratory bronchioles.
- Examples are *chronic obstructive lung disease (COPD - Emphysema, bronchitis), bronchiectasis, and asthma.*
- Restrictive disease**
- Restrictive disease is characterized by reduced expansion of lung parenchyma, with decreased total lung capacity. o It may occur due to two types of disorders -
- Chest wall disorders in the presence of Normal lungs
Neuromuscular disorders, e.g. polio, severe obesity, pleural disease, kyphoscoliosis.
- Interstitial and infiltrative diseases of lung Pneumoconiosis, interstitial fibrosis.

432. Curshmann's crystals are seen in ?

- a) Bronchial asthma
- b) Bronchiectasis
- c) Chronic bronchitis
- d) Wegners granulomatosis

Correct Answer - A

Ans. is 'a' i.e., Bronchial asthma

Pathology of Asthma

Gross ?

- * Lungs are overdistended because of overinflation and there may be small area of atelectasis.
- * The most striking macroscopic finding is *occlusion* of bronchi and bronchioles by *thick tenacious mucus plugs*.

Histology ?

- * Characterized by presence of numerous eosinophils and neutrophils.

Curschntan spiral - Whorls of shed epithelium in mucus plugs.

Charcot -leyden crystals - Collection of crystalloids made up of eosinophilic membrane protein.

The other characteristic histological finding of Asthma is collectively called Airway remodelling, it includes ?

- * Thickening of the basement membrane of the bronchial epithelium.
- * Edema and an inflammatory infiltrate in the bronchial walls with a prominence of eosinophils and mast cells.
- * An increase in the size of submucosal glands.
- * Hypertrophy of bronchial wall muscle.

The "*airway remodelling*" contributes to airflow obstruction.

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433. Terminal stage of pneumonia is

a) Congestion

b) Red hepatization

c) Gray hepatization

d) Resolution

Correct Answer - D

Ans. is 'd' i.e., Resolution

- In the usual course of pneumonia, final stage is resolution.
- However, in some neglected cases following complications may develop -
Abscess formation Pleural effusion, pleuritis
Empyema Bacteremic dissemination Brain abscess,
endocarditis, meningitis,
Organization suppurative arthritis.

Pathological changes of bacterial pneumonia

A.Lobar pneumonia

- Large confluent area of the lung or entire lobes are consolidated.
- The lower lobes are affected most commonly.
- There are four stages of the inflammatory response (Laennec's stages) ?
 1. Stage of congestion (initial phase)
 - The affected lobe is enlarged, heavy, dark red and congested.
 - Cut surface exudes blood-stained frothy fluid.
 - There is dilatation and congestion of alveolar capillaries.
 - There are few neutrophils and *numerous bacteria* in the alveolar fluid.
 2. Stage of red hepatization (early consolidation)
 - The term hepatization refers to liver-like consistency of the affected

lobe on cut section.

- The affected lobe is *red and firm*.
- The edema fluid of preceding stage is replaced by strands of fibrin.
- There is marked cellular exudate of neutrophils with extravasation of red cells.

3. Stage of gray hepatization (late consolidation)

- The affected lobe is grayish brown, firm and dry.
- The fibrin strands are dense and more numerous.
- There is progressive disintegration of red cells and neutrophils.
- The macrophages begin to appear in the exudate.
- The organisms are less numerous and appear as degenerated forms.

4. Resolution

- The previously solid and fibrinous constituent is liquefied by enzymatic action.
- Granular and fragmented strands of fibrin in the alveolar spaces are seen due to progressive enzymatic digestion.
- There is progressive removal of fluid content as well as cellular exudate from the air spaces, resulting in restoration of normal lung parenchyma with aeration.

B. Bronchopneumonia

- Patchy areas of red or grey consolidation, more often multilobar and frequently bilateral and basal (lower zones) because of tendency of secretions to gravitate into lower lobes..
- There is suppurative exudate, consisting chiefly neutrophils, filling bronchi, bronchioles and adjacent alveolar spaces.
- Alveolar septa thicken due to congested capillaries and leucocytic infiltration.

434. Primary pleural tumor is

a) Mesothelioma

b) Myxoma

c) Lipoma

d) All

Correct Answer - A

Ans. is 'a' i.e., Mesothelioma

Pleural tumors

* The pleura may be involved by primary or secondary tumors.

Primary tumors

* *Benign* --> Solitary fibrous tumor (benign fibrous mesothelioma or benign mesothelioma or *pleural fibroma*).

* *Malignant* —> Malignant mesothelioma.

Secondary tumors

* More common than primary tumors.

* Most common primary sites are lung and breast.

435. Renal cell carcinoma is related to gene located on chromosome -

a) 3

b) X

c) 22

d) 20

Correct Answer - A

Ans. is 'a' i.e., 3

o Clear cell carcinoma is the most common renal cell carcinoma and is associated with *3p deletion*.

436. The pathogenesis of acute proliferative glomerulonephritis -

- a) Cytotoxic T-cell mediated
- b) Immune complex mediated
- c) Antibody mediated
- d) Cell-mediated (Typer IV)

Correct Answer - B

Ans. is 'b' i.e., Immune complex mediated

* Postinfectious acute proliferative glomerulonephritis is due to immune-complex mediated (Type III) hypersensitivity.

437. According to WHO, membranous glomerulonephritis seen in SLE, is -

a) Class II

b) Class III

c) Class IV

d) Class V

Correct Answer - D

Ans. is 'd' i.e., Class V

- There are several versions of WHO classification of lupus nephritis ?
 - 1) Minimal or no detectable abnormalities (class I)
 - 2) Mesangial lupus glomerulonephritis (class II)
 - 3) Focal proliferative glomerulonephritis (class III)
 - 4) Diffuse proliferative glomerulonephritis (class IV)
 - 5) Membranous glomerulonephritis (class V)

438. All are features of haemolytic uremic syndrome, except-

- a) Hyperkalemia
- b) Anaemia
- c) Renal microthrombi
- d) Neuro psychiatric disturbances

Correct Answer - D

Ans. is 'd' i.e., neuropsychiatric manifestations

Hyperkalemia is seen in hemolytic uremic syndrome as a result of renal failure.

ABOUT NEUROPSYCHIATRIC MANIFESTATIONS

- * *Neurological manifestations* are used to distinguish between Hemolytic uremic syndrome and Thrombotic Thrombocytopenic Purpura.
- * H.U.S. is distinguished from T.T.P by the absence of neurological symptoms and the prominence of acute renal failure.
- * Recent studies, however have tended to blur these clinical distinctions. Many adult patients with "T. T.P. lack one or more of the five criteria and patients with "HUS" have fever and neurological dysfunction.

439. True about light microscopy in minimal change disease is:

a) Loss of foot process seen

b) Anti GBM Abs seen

c) IgA deposits seen

d) No change seen

Correct Answer - D

Answer is D (No change seen)

No abnormality is evident on light microscopy in a case of minimal change disease.

Investigation

- *Light microscopy* ^Q
- *Electron microscopy* ^Q
- *Immunofluorescence* ^Q

Observation

- *No abnormality hence the term minimal change*
- *Fusion of foot processes*
- *Absence of immunoglobulin or complement*

440. In glomerulus subendothelial deposits are seen in?

a) Good pasture syndrome

b) IgA nephropathy

c) MPGN type I

d) MPGN type II

Correct Answer - C

Ans. is 'c' i.e., MPGN type I

Sub endothelial - MPGN (Type-1), SLE, Acute ON

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441. Not true about Alport's syndrome ?

a) X-linked

b) Autosomal dominant

c) Nerve deafness

d) Glomerulonephritis

Correct Answer - B

Ans. is 'b' i.e., Autosomal dominant

- Autosomal dominant form also exist, but it is very rare. Thus, among the given options, it is the best answer.

- Other three options are classical features of Alport's syndrome.

Alport's syndrome

- Alport's syndrome is a type of hereditary nephritis characterized by -
- Glomerulonephritis progressing to chronic renal failure.
- Nerve deafness
- Eye defects lenticonus, lens dislocation, posterior cataract, corneal dystrophy.
- Most commonly it is inherited as X-linked form.
- Rare autosomal - recessive and autosomal-dominant pedigrees also exist.
- Pathogenesis
- There is defective GBM synthesis because of production of abnormal collagen type IV underlies the renal lesions.
- The defect is caused by mutation in the gene encoding a α -chain of collagen type IV.

442. Michaelis Gutmann bodies are seen in

a) >Xanthogranulomatous

b) >pyelonephritis

c) >Malakoplakia

d) Nail patella syndrome

Correct Answer - C

Malakoplakia [Ref. Robbins 7th/e p 1027-1028]

- Malakoplakia is a *variant of cystitis*, it is related to chronic bacterial infection mostly by *E.coli* or occasionally by *proteus* species.
- *It is characterized by unusual appearing macrophages and giant phagosomes.*
- *It points to defect in phagocytic or degradative function of macrophage.*
- *It is a peculiar pattern of vesical inflammatory reaction characterized microscopically by soft, yellow, slightly raised mucosal plaques 3-4 cm in diameter.*
- *Histologically it is characterized by infiltration with large foamy macrophages with occasional multinucleate giant cells and interspersed lymphocytes. "*
- *The macrophages have an abundant granular cytoplasm and the granularity is PAS positive.*
- *In addition to these histological changes, malakoplokia is also characterized by Michaelis Guttman bodies. - Michalies Guttman bodies are Laminated mineralized concretions resulting from deposition of calcium in enlarged lysosomes.*
 - They are typically present both within the macrophages and between cells.
 - They demonstrate positive results using PAS stain and are diastase resistant.

diastase resistance.

- They stain with Kossa, stain for calcium and perls Prussian blue stain for iron.

- Immunohistochemical studies demonstrates positive results for CD68 antibodies.

- Malakoplakia occurs with increased frequency in *immunosuppressed transplant recipients*.

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443. Not a carcinogen for bladder cancer?

a) Benzidine

b) Isopropyl alcohol

c) Acrolein

d) Phenacetin

Correct Answer - B

Ans. is 'b' i.e., Isopropyl alcohol

Risk factors for transitional cell carcinoma (TCC) of bladder ?

- Smoking -4 Major etiological factor.
- Occupational exposure to chemicals → Nephthylamine benzidine, aniline dyes, acrolein.
- Schistosoma haematobium (Bilharziasis) → It is a risk factor for both TCC & SCC.
- Drugs —> Phenacetin
- Cyclophosphamide therapy
- Pelvic irradiations

444. All are true about Polycythemia vera except

a) Increased vit B₁₂

b) Decrease LAP score

c) Leucocytosis

d) Increased platelets

Correct Answer - B

Ans. is 'b' i.e., Decrease LAP score

Polycythemia vera

- Polycythemia vera is a neoplasm arising in a multipotent myeloid stem cell that is characterized by increased marrow production of erythroid, granulocytic and megakaryocytic elements.
- This leads to erythrocytosis (polycythemia), granulocytosis, and thrombocytosis in the peripheral blood.
- Polycythemia is responsible for most of the clinical symptoms of polycythemia vera.
- Polycythemia vera progenitor cells have markedly decreased requirements for erythropoietin and other hematopoietic growth factors. Accordingly serum erythropoietin levels in polycythemia vera are very low, whereas almost all other forms of absolute polycythemia are caused by elevated erythropoietin levels.

Clinical manifestations

1. Symptoms due to polycythemia

- Most symptoms are related to the increased red cell mass and hematocrit, i.e., Polycythemia.
- The elevation of hematocrit is usually accompanied by increased total blood volume, and together these two promote abnormal blood

flow, particularly on the low pressure venous side of the circulation, which becomes greatly distended. That results in -

- Plethora or cyanosis owing to stagnation of deoxygenated blood in peripheral vessels.
- Headache, dizziness, hypertension and
- Diminished vision from blockade of retinal vessels.

2. Symptoms due to granulocytosis

- Basophils secrete histamine that results in -
- Intense pruritis
- Peptic ulceration
- Increased vit B₁₂ binding capacity because of increase in transcobalamin I & II.

3. Symptoms due to Thrombocytosis

- There is increased risk of both thrombosis and major bleeding episodes.

Thrombosis

DVT, MI, Stroke, Budd chiari syndrome.

Bleeding

Upper GI bleeding from peptic ulcer.

Laboratory features of Polycythemia vera.

Increased Red cell count
(Polycythemia)

Increased Vit B₁₂ binding
capacity

Increased WBC count
(Leucocytosis)

Increased blood viscosity

Increased platelet count
(Thrombocytosis)

Decreased ESR

Increased Leucocyte alkaline
phosphate (LAP) score

Hyperuricemia due to increased
turnover of cells.

Increased hemoglobin

Increased histamine level

445. Mantle cell lymphomas are positive for all of the following, except ?

a) CD 23

b) CD 20

c) CD 5

d) CD 43

Correct Answer - A

Ans. is 'a' i.e., **CD 23**

Mantle cell lymphoma

- Mantle cell lymphoma is a type of non-Hodgkin lymphoma characterized by the presence of tumor cells that closely resemble the normal mantle zone of B-cells that surround germinal centers.
- Immunophenotype of mantle cell lymphoma
- Mantle cell lymphoma is a neoplasm of B cells.
- Therefore it expresses B cell marker: CD19, CD20
- Surface immunoglobulin heavy chain (IgM and IgD).
- Either c or X light chain.
- As the tumor cells are derived from the Mantle zone, they are positive for B cell marker of mantle zone i.e., CD-5.
- Mantle cell lymphoma is CD23 negative, this feature distinguishes it from chronic lymphocytic leukemia (CLL) which is positive for both CD5 and CD23.
- The other characteristic marker of mantle cell lymphoma is cyclin D1.

Cytogenetic abnormalities:

Mantle cell lymphoma is associated with an 11: 14 translocation involving the IgH locus on chromosome 14 and the cyclin D1 locus on chromosome 11.

This leads to increased expression of cyclin D1, which promotes G1

to S phase progression during the cell cycle.

65 years old man with splenomegaly, lymphadenopathy CD-23 negative and CD-5 positive B-cell suggest the diagnosis of mantle cell lymphoma.

Clinical features of mantle cell lymphoma:

- It is usually present in the fifth to a sixth decade with male preponderance.
- The most common presentation is painless lymphadenopathy.
- Splenomegaly may occur.
- Occasionally, multifocal mucosal involvement of the small bowel and colon produces lymphomatoid polyposis → of all forms of NHL, mantle cell lymphoma is most likely to spread in this fashion.

446. Bone marrow finding in myelofibrosis ?

a) Dry tap (hypocellular)

b) Megaloblastic cells

c) Microcytic cells

d) Thrombocytosis¹⁸

Correct Answer - A

Ans. is 'a' i.e., Dry tap (hypocellular)

Myelofibrosis

- The hallmark of primary myelofibrosis is rapid development of obliterative marrow fibrosis.
- Myelofibrosis suppresses bone marrow hematopoiesis, leading to peripheral blood cytopenias.
- This results in extensive extramedullary hematopoiesis in the spleen, liver and lymphnode → Splenomegaly and hepatomegaly.
- Blood cell production from sites of extramedullary hematopoiesis is disordered and ineffective → Persistent cytopenia. Peripheral blood picture
- Leukoerythroblastosis → Presence of erythroid and granulocytic precursors in the peripheral blood.
- Tear-drop erythrocytes (dacrocytes) → Fibrotic marrow distorts and damages the membranes of erythroid progenitors.

Bone marrow findings

- Initially marrow is hypercellular.
- With progression marrow becomes hypocellular and diffusely fibrotic → Bone marrow aspiration is a dry tap.
- There is increase laying down of reticulin fibril network.
- Cellularity of bone marrow is decreased, but megakaryocytes are increased and demonstrate features of dysmegakaryopoiesis.

- Dilated marrow sinusoids.

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447. Maltoma is positive for?

a) CD 3

b) CD 10

c) CD 23

d) CD 5

Correct Answer - C

Ans. is 'c' i.e., CD 23

Mantle cell lymphoma-

- Surface immunoglobulin heavy chain (IgM & IgD)
- CD19⁺, CD20⁺
- CD5 (+)ve & CD 23 (-)ve differentiating feature from CLL
- Cyclin D1

448. AML causing Gum hypertrophy ?

a) M1

b) M2

c) M3

d) M4

Correct Answer - D

Ans. is 'd' i.e., M4

In acute leukemias the clinical features are primarily seen because of :

- Replacement of normal cells of bone marrow by leukemic cells resulting in anemia, thrombocytopenia, neutropenia. Infiltration of leukemic cell in various extramedullary organs causing, hepaticomegaly, splenomegaly. *Gum hypertrophy due to infiltration of gums by leukemic cells is one such feature.* It is characteristically associated with AML-M5 and AML-M4 i.e. (acute monocytic leukemia).

449. DIC is common in which AML -

a) Nonocytic (**M₅**)

b) Promyelo cytic (**M₃**)

c) Erythrocytic (**M₆**)

d) Megakaryocytic (**M₇**)

Correct Answer - B

Ans. is 'b' i.e., Promyelocytic

- Tumor cells in acute promyelocytic leukemia (M₃) release procoagulant and fibrinolytic factors that cause disseminated intravascular coagulation (DIC).

450. Localised langerhans cells histiocytosis affecting head & neck is ?

- a) Letterer-siwe disease
- b) Pulmonary langerhans cell histiocytosis
- c) Hand-schuller-christian disease
- d) Eosinophilic granuloma

Correct Answer - D

Ans. is `d i.e., Eosinophilic granuloma

Clinical manifestations of Langerhans cell histiocytosis (Histiocytosis-X1)

1. Letterer Siwe disease (multifocal, multisystem LCH)
 - Most frequently present *before 2 years of age*.
 - Characterized by involvement of multiple system.
 - Most common presentation is cutaneous lesions *resembling seborrheic dermatitis*.
 - Others are hepatosplenomegaly, lymphadenopathy pulmonary lesions and destructive bone lesions.
 - Extensive bone marrow infiltration leads to pancytopenia.
2. Eosinophilic granuloma (Unifocal and multifocal unisystem LCH)
 - Involvement is restricted to a single system i.e., skeletal system which may be unifocal or multifocal.
 - Most commonly effected bones are skull, vertebrae, ribs, clavicle, and femur.
3. Hand-Schuller-Christian disease
 - Characterized by triad of clavical bone defects, diabetes insipidus, and exophthalmos.

451. Which is not a feature of paroxysmal nocturnal hemoglobinuria -

a) Increased LAP score

b) Thrombosis

c) Thrombocytopenia

d) Hemolysis

Correct Answer - A

Ans. is 'a' i.e., Increased LAP score

Clinical features of PNH

A. Intravascular hemolysis

* The main feature of PNH is increased intravascular hemolysis that results in -

Hemoglobinemia

Increased urine

urobilinogen

Hemoglobinuria

Decreased serum

haptoglobin

Hemosiderinuria

Increased serum LDH

Increased serum bilirubin

- *The hemolysis is paroxysmal and usually occurs in the night because during sleep the pH of blood gets slightly reduced and acidic medium leads to activation of the complement.*
- B. Thrombosis
- In PNH there is episodic thrombosis due to *absence of CD-59 on platelets*, this results in externalization of phosphatidylserine, a site for prothrombinase complexes and thus increase the propensity for thrombosis.
 - * *Intrabdominal veins are the most common sites of thrombosis that may result in Budd chiary syndrome due to hepatic vein thrombosis.*

C. Other features

- *Thrombocytopenia*
- *Granulocytopenia*
 - * *Decreased LAP score*
 - * *Normoblastic hyperplasia of bone marrow*
 - * *PNH patients are also at increased risk for developing acute myelogenous leukemia and aplastic anemia.*

452. All of the following immunohistochemical markers are positive in the neoplastic cells of granulocytic sarcoma, except ?

a) CD45 RO

b) CD 43

c) Myeloperoxidase

d) Lysozyme

Correct Answer - A

Ans. is 'a' i.e., CD 45 RO

Granulocytic sarcoms (Chloroma or myeloblastoma)

- Granulocytic sarcoms or chloroma is a solid tumor composed of myeloblasts.
- A chloroma is an extramedullary manifestation of AML, i.e., it is a solid collection of leukemic cells occurring outside of the bone marrow.
- These tumors often have a green tint due to the presence of myeloperoxidase.
- Chloromas are more common in monocytic differentiation (M4 & M5 type) AML.
- Though chloromas occur most commonly in patients with AML, they may also occur in patients with : ?
- Myelodysplastic syndrome
- Myeloproliferative syndromes (Myelofibrosis, CML, Polycythemia vera, Essential thrombocythosis) Without concomitant disease, i.e., Primary chloroma.

Chloromas are positive for : ?

CD 68	CD 20	CD 117	Lysozyme
CD 43	CD 34	Myeloperoxidase	

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453. Pseudo-Pelger-Huet cells or seen in

- a) Hairy cell leukemia
- b) Multiple myeloma
- c) Myelodysplastic syndrome
- d) Hodgkin's lymphoma

Correct Answer - C

Ans. is 'c' i.e., Myelodysplastic syndrome

- **Peripheral blood** shows the presence of Pseudo- Pelger-Huet cells, giant platelets, macrocytes, poikilocytes and monocytosis.
- Clinical features are seen in only 50% patients including weakness, infection and hemorrhage due to pancytopenia.
- Usually patients are of an old age (mean age of onset is > 60 years). The prognosis is poor.

454. Which of the following is not a myeloproliferative disease ?

- a) Polycythemia vera
- b) Acute myeloid leukemia
- c) Chronic myeloid leukemia
- d) Essential thrombocytosis

Correct Answer - B

Ans. is 'b' i.e., Acute myeloid leukemia

Chronic myeloproliferative disorders

- The disorders in this group are ?
Chronic myeloid leukemia Essential thrombocytosis
Polycythemia vera Primary myelofibrosis
- These diseases are characterized by neoplastic proliferation of multipotent progenitor cell that is capable of giving rise to mature erythrocytes, platelets, granulocytes, monocytes and lymphocytes.
- An important feature of myeloproliferative disorders is that in their terminal phase they are characterized by marrow fibrosis and peripheral blood cytopenia.
- All of them can progress over time to acute leukemia, but only CML does so invariably.
- **Remember**
- CML, Polycythemia vera and essential thrombocytosis can progress to myelofibrosis in terminal stage.

455. Anemia with reticulocytosis is seen in -

- a) Hemolysis
- b) Iron deficiency anemia
- c) Vitamin B₁₂ deficiency
- d) Aplastic anemia

Correct Answer - A

Ans. is 'a' i.e., Hemolysis

Conditions

- Acute blood loss or hemorrhage
- Postsplenectomy
- Microangiopathic anemia
- Autoimmune hemolytic anemia
- Hemoglobinopathy (Sickle cell anemia and thalassemia)
- Post anemia treatment like folate supplementation, iron supplementation & vitamin B₁₂, supplementation

456. Intracorpuseular hemolytic anemia is seen in ?

a) Autoimmune hemolytic anemia

b) TIP

c) Thalassemia

d) Infection

Correct Answer - C

Ans. is `c' i.e., Thalassemia

- *Intracorpuseular hemolysis* : Hereditary spherocytosis, G6PD deficiency, *thalassemia*, sickle cell anemia, PNH.
- *Extracorpuseular hemolysis* : Microangiopathic hemolytic anemia (TTP, HUS, DIC), infection (malaria), prosthetic valve, *immunohemolytic anemia* and hyperplenism.

457. Not true about hereditary spherocytosis

a) Defect in ankyrin

b) Decreased MCV

c) Decreased MCHC

d) Reticulocytosis

Correct Answer - C

Ans. is 'c' i.e., Decreased MCHC

Laboratory findings

- *Spherocytosis* 4 Peripheral smear shows microspherocytes which are small RBCs *without central pallor* (Normally central 1/3 pallor is present in red cells).
- *MCV* with any type of hemolytic anemia.
- *MCHC* T
- *Increased unconjugate bilirubin* decreased.
- *Urine urobilinogen* T
- *Stool stercobilinogen* T
- *Reticulocytosis* -) As seen
- *Hemoglobin*
- *Serum Heptoglobin* Normal to
- *Increased osmotic fragility.*

458. In sickle cell anemia all are true except -

- a) Sickle cells
- b) Target cells
- c) Howell jolly bodies
- d) Ringed sideroblast

Correct Answer - D

Ans. is 'd' i.e., Ringed sideroblast

Laboratory findings of sickle cell anemia :?

- Moderate to severe anaemia.
- Peripheral smear will show
- Sickle cells
- Target cells
- Howell-Jolly bodies because of autosplenectomy.
- A positive sickling test with a reducing substance like sodium metabisulfite.
- Sickle cell anemia is caused by replacement of normal Hemoglobin by sickled hemoglobin (HbS).
- HbS is formed by replacement of Glutamine by Valine at position 6
- This substitution replaces the polar Glutamine residue with a nonpolar Valine.
- The replacement of Glutamine by Valine generates a sticky patch on the surface of HbS.
- The sticky patch is present on both oxygenated and deoxygenated HbS
- The deoxygenated HbS also contains a complementary site for the sticky patch.
- In oxygenated hemoglobin this complementary site is masked.
- When HbS is deoxygenated the sticky patch present on its surface

binds to the complementary patch on another deoxygenated HbS molecules.

- This binding leads to polymerization of deoxyhemoglobin S forming long fibrous precipitates.
- These extend throughout the erythrocyte and mechanically distort it, causing lysis and multiple secondary clinical effect.
- So, if HbS can be maintained in an oxygenated state or if the concentration of deoxygenated HbS can be minimized, formation of these polymers will not occur and sickling can be prevented (Remember the complementary site for the sticky patch remains masked in case of Oxygenated HbS).

Role of HbA in polymerization

- Unlike HbS, HbA does not contain any sticky patch, but it does have a binding site for the sticky patch of HbS.
- Thus it can bind to HbS through its receptor site but this binding cannot extend the polymer because HbA does not contain any sticky patch to promote binding to still another hemoglobin molecule.
- So HbA interferes with the polymerisation and aggreation of HbS and reduces the intensity of sickle cell anemia.

459. Person having heterozygous sickle cell trait is protected from infection of:

a) *P. falciparum*

b) *P. vivax*

c) *Pneumococcus*

d) *Salmonella*

Correct Answer - A

Ans. a. *P. falciparum*

- Person having heterozygous sickle cell trait is protected from infection of *P. falciparum*.
- "People who are heterozygous for the sickle cell trait (HbS) become infected with *P. falciparum*, but they are less likely to die from infection°. The HbS trait causes the parasites to grow poorly or die because of the low oxygen concentrations°." - *Robbins 8/e p387*

Host Resistance to Plasmodium

- Two general mechanisms of host resistance to *Plasmodium*:
- Inherited alterations in red cells make people resistant to *Plasmodium*°.
- Repeated or prolonged exposure to *Plasmodium* species stimulates an immune response that reduces the severity
- People who are heterozygous for the sickle cell trait (HbS) become infected with *P. falciparum*, but they are less likely to die from infection°.
- The HbS trait causes the parasites to grow poorly or die because of the low oxygen concentrations°.
- The geographic distribution of the HbS trait is similar to that of *P. falciparum*°, suggesting evolutionary selection of the HbS trait in people by the parasite

- HbC, another common hemoglobin mutation, also protects against severe malaria by reducing parasite proliferation°.

Host Resistance to Plasmodium.

- People can also be resistant to malaria due to the absence of proteins to which the parasites bind°.
- *P. vivax* enters red cells by binding to the Duffy blood group antigen°.
- Many Africans, including most Gambians, are not susceptible to infection by *P. vivax* because they do not have the Duffy antigen°.
- Antibodies and T lymphocytes specific for *Plasmodium* reduce disease manifestations. Cytotoxic lymphocytes may also be important in resistance to *P. falciparum*

460. Thalassemia gives protection against ?

a) Filaria

b) Kala-azar

c) Malaria

d) Leptospirosis

Correct Answer - C

Ans. is 'c' i.e., Malaria

- Types of anemia that have protective effect against *P. falciparum* malaria : -
- G6PD deficiency, Sickle cell anemia, Thalassemia, HbC, Pyruvate kinase deficiency

461. Donath landsteiner antibody is seen in?

- a) PNH
- b) Waldenstrom's macroglobulinemia
- c) Paroxysmal cold hemoglobinuri
- d) Malaria

Correct Answer - C

Ans. is 'c' i.e., Paroxysmal cold hemoglobinuria

Paroxysmal cold hemoglobinuria (PCH)

- PCH is characterized by intermittent massive intravascular hemolysis frequently with hemoglobinuria at low temperature.
- The autoantibodies are of IgG class, also known as Donath-Landsteiner antibody.
- These antibodies are directed against P-antigen on RBC.
- Antigen antibody complex on the red blood cell activates complement.
- As a result, large amount of membrane attack complex forms which destroys red cells directly → intravascular hemolysis.

Causes are : -

- Syphilis, Mycoplasma, Mumps, Measles, Flu syndrome

462. Normal transferrin is saturated with iron ?

a) 20%

b) 35%

c) 50%

d) 70%

Correct Answer - B

Ans. is 'b' i.e., 35%

- In normal individuals, transferrin is about one third saturated with iron, yielding serum iron levels that average 120 g/dl in men and 100 g/dl in women.

Serum ferritin

- Most of the ferritin is stored in different organs (liver, spleen, bone marrow).
- Very small amounts of ferritin normally circulate in the plasma.
- Since plasma ferritin is derived largely from the storage pool of body iron, its level correlates well with body iron stores. i.e., when there is iron depletion, body store of iron is reduced that in turn leads to decrease in plasma ferritin.

Transferrin saturation and iron binding capacity

- Iron is transported in the plasma by transferrin.
- Normally transferrin is 33% saturated (77% free) with iron, yielding serum iron levels that average 100-120 g/dl.
- So, if serum transferrin will be 100% saturated the serum iron will be 300 g/dl. that means the total iron binding capacity of transferrin is 300 to 350 g/dl.
- When iron store is depleted e.g., in iron deficiency anemia, there is increased synthesis of transferrin that results in increased total iron

binding capacity.

- When iron store is depleted e.g., anemia of chronic disease, there is decreased synthesis of transferrin that results in decreased total iron binding capacity.

Serum transferrin receptors

- Erythroid precursors have receptors for transferrin by which they receive iron from transferrin that is utilized for hemoglobin synthesis.
- When erythroid precursors mature, these receptors are shed into plasma and can be measured as serum transferrin receptors concentration.
- In iron deficiency state, there is increased erythropoiesis in bone marrow → ↑ concentration of erythroid precursor that results in increased total number of transferrin receptor → ↑ serum transferrin receptor concentration.

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463. Response to iron in iron deficiency anemia is denoted by-

- a) Restoration of enzymes
- b) Reticulocytosis
- c) Increase in iron binding capacity
- d) Increase in hemoglobin

Correct Answer - B

Ans. is 'b' i.e., Reticulocytosis

Response to iron therapy

- When specific iron therapy is given, *patients often show rapid subjective improvement, with disappearance or marked diminution of fatigue, lassitude, and other non-specific symptoms.* This response may occur before any improvement in anemia is observed.
- *The earliest hematological evidence of recovery is increase reticulocytes and their hemoglobin content.* The reticulocytes attain a maximal value on the 5th to 10th day after institution of therapy and thereafter gradually return to normal. The reticulocyte response may not be detectable in mild iron deficiency anemia.
- *The blood hemoglobin level is the most accurate measure of the degree of anemia in iron deficiency anemia.* During the response to therapy, the red cell count may increase temporarily to values above normal, but the hemoglobin value lags behind.
- The red cell indices may remain abnormal for some time after the normal hemoglobin level is restored. As recovery occurs, a normocytic cell population gradually replaces the microcytic population; and *one of the early signs of response to therapy is an increase in RBW from pretreatment level.*
- When treatment is fully effective, hemoglobin reaches normal levels

- by 2 months after therapy is initiated, regardless of starting values.
- Of the epithelial lesions in iron deficiency, those affecting the tongue and nails are the most responsive to treatment.

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464. Which does not cause sideroblastic anaemia?

a) INH

b) Chloramphenicol

c) Myelodysplastic anaemia

d) Mercury

Correct Answer - D

Ans. is 'd' i.e., Mercury

Hereditary- X-linked recessive sideroblastic anemia

Acquired-

Hematological

Myelofibrosis
Myelodysplasia
Acute leukemia
Lymphoma
Myeloma
Polycythemia vera
Hemolytic anemia

Drugs & chemicals

INH
Penicillamine
Lead
Alcohol
Pyridoxin deficiency
Chloromphenicol

Others

RA
Myxedema
SLE
Iron overload
Porphyria

465. Shelf life of blood with CPDA -

a) 2 weeks

b) 3 weeks

c) 5 weeks

d) 8 weeks

Correct Answer - C

Ans. is 'c' i.e., 5 weeks

* Once blood is removed from the donor, it starts a sequences of in vitro changes that change its physiological properties.

* Ensuring the blood and its products transfusion safe, their storage is a must.

* The main aim is to minimize damage to store blood.

* Addition of some additive solutions increases the viability of blood, particularly RBCs:

Additive	Shelf life of RBC
Acid-citrate-dextrose (ACD) days	21
Citrate phosphate dextrose (CPD) days	21
<i>Citrate phosphate dextrose-adenine (CPD-A)</i> 35 days	
Saline-adenine-Glucose-Mannitol (SAG-M) 42 days	

466. Blood when stored at 4°C can be kept for ?

a) 7 days

b) 14 days

c) 21 days

d) 28 days

Correct Answer - C

Ans. is 'c' i.e., 21 days

- The recommend temperature for storage of blood is 1-6°C.
- Actually blood can be stored for more than 21 days, depending upon the type of additive used.
- "Routine blood storage is limited to 21 days at 1-6°C when treated with acid-citrate-dextrose (ACD) or citratephosphate-dextrose (CPD); and 35 days when treated with citrate-phosphosphate-dextrose-adenine (CPD-A); and 42 days when treated with saline-adenine-glucose-mannital (SAG-M)"
- So, correct answer of this question can be:
 - .. 21 days (we have only this one in the options)
 - }. 35 days
 - }. 42 days (*This is the best answer because SAG-M is the routinely used additive these days*).
- Platelets are stored at 20-24°C for 3-5 days

467. Gastric carcinoma is associated with all EXCEPT ?

- a) Inactivation of p53
- b) Over expression of C-erb
- c) Over expression of C-met
- d) Activation of RAS

Correct Answer - D

Ans. is 'd' Activation of RAS

- In the course of multi-step stomach carcinogenesis, various genetic and epigenetic alterations of oncogenes, tumor-suppressor genes, DNA repair genes, cell cycle regulators and cell adhesion molecules are involved. Genetic alteration in gastric cancer include:
- Intestinal type gastric cancer: K-ras mutation, APC mutation, p53 methylation, HMLH1 methylation, p16 methylation, p73 deletion and C-erb B-2 amplification.
- Diffuse type gastric cancer: CDH1 gene (E-Cadherin) mutation, K-ras amplification.
- For both type: Telomerase reduction (telomerase shortening), hTERT expression, genetic instability, overexpression of the cyclin E & CDC25B & E2F1 genes, p53 mutations, reduced expression, CD44 aberrant transcripts, and amplification of the C-met Cyclin E genes.

Coming to question:

- All the given four genetic alterations may be associated with stomach cancer.
- However among the given options K-ras is best answer as it is associated with gastric cancer in minimum percentage (amongst given options):

Source: Textbook of mechanism of carcinogenesis and cancer prevention

K-ras mutation -4 <10%

p53 mutation 30-60%

C-erb B-2 amplification --> 20%

C-met amplification --> 20%

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468. Linitis plastica is a type of ?

- a) Plastic like lining of stomach
- b) Diffuse carcinoma of stomach
- c) Benign ulcer
- d) GIST

Correct Answer - B

Ans. is 'b' i.e., Diffuse carcinoma of stomach

Linitis plastica

- Involvement of a broad region of the gastric wall or entire stomach by diffuse stomach cancer cause linitis plastica.
- It is also known as Brinton's disease.
- The appearance of stomach is like leather bottle.
- The other cause of linitis plastica are
 - Lye ingestion
 - Metastatic infiltration of stomach
 - Syphilis
 - Sarcoidosis
 - Non-hodgkin lymphoma of stomach

469. Intestinal angiodysplasia involves ?

- a) AV malformation
- b) Cavernous hemangioma
- c) Capillary hemangioma
- d) Malignant tumor

Correct Answer - A

Ans. is 'a' i.e., AV malformation

Angiodysplasia

- Angiodysplasia is characterized by malformed submucosal blood vessels (AV malformation).
- Lesions of angiodysplasia are ectatic nest of tortuous veins, venules and capillaries.
- Most common site is caecum and right colon.
- Usually occurs after 6th decade of life.
- Major presentation is bleeding (intestinal bleeding).
- Pathogenesis of angiodysplasia has been linked to mechanical and congenital factors :?

1. Mechanical factor

- Normal distension and contraction intermittently occlude submucosal veins and leads to dilatation and tortuosity of overlying vessels. Because cecum has the largest diameter, it develops the greatest wall tension. Therefore cecum is the most common site for angiodysplasia.

2. Genetic (developmental) factor

- Some data link angiodysplasia with aortic stenosis and Meckel diverticulum suggesting the possibility of a developmental component.

470. Multiple epidermoid cysts are seen in -

- a) Turcot's syndrome
- b) Gardner's syndrome
- c) Peutz-Jegher syndrome
- d) Familial polyposis coli

Correct Answer - B

Ans. is 'b' i.e., Gardner's syndrome

o Gardner syndrome includes adenomatous polyps of the gastrointestinal tract, desmoid tumours, osteomas, epidermoid cysts, lipomas, dental abnormalities and periampullary carcinomas.

471. Features of Peutz-Jeghers syndrome are all except?

- a) Autosomal dominant
- b) Mucocutaneous pigmentation
- c) Hamartomatous polyp
- d) High risk of malignancy

Correct Answer - D

Ans. is 'd' i.e., High risk of malignancy

o Malignancy is rare in hamartomatous polyps of Peutz-Jeghers syndrome.

- Other three options are correct (see previous explanation).

472. Most common location of gastrinoma is:
September 2007

a) Pancreas

b) Duodenum

c) Jejunum

d) Gall bladder

Correct Answer - B

Ans. B: Duodenum

Zollinger-Ellison syndrome is a disorder where increased levels of the hormone gastrin are produced, causing the stomach to produce excess hydrochloric acid.

Often the cause is a tumor (gastrinoma) of the duodenum or pancreas producing the hormone gastrin. Gastrin then causes an excessive production of acid which can lead to peptic ulcers in almost 95% of patients.

Gastrinomas may occur as single tumors or as multiple, small tumors. About one-half to two-thirds of single gastrinomas are malignant tumors that most commonly spread to the liver and lymph nodes near the pancreas and small bowel. Nearly 25 percent of patients with gastrinomas have multiple tumors as part of a condition called multiple endocrine neoplasia type I (MEN I). MEN I patients have tumors in their pituitary gland and parathyroid glands in addition to tumors of the pancreas.

473. All of the following are associated with carcinoma colon except ?

a) Smoking

b) Alcohol

c) Fibre diet

d) Fatty food

Correct Answer - C

Ans. is 'c' i.e., Fibre diet

- Fibre diet is protective against colon cancer (see previous explanations).

Risk factors for Colon cancer

- .. Dietay factors - explained in previous quetion
- 2. Hereditary factors
- Polyposis coli
- Nonopolyposis hereditary colon cancer (also known as Lynch syndrome)

Inflammatory bowel disease

- Long standing IBD increases the risk
- Risk is more with ulcerative colitis than crohn's disese.
- Risk increases with the duration and extent of colitis.
- Left sided colitis carries somewhat less risk.
- Streptococcus bovis bacteremia
- Individuals who develop endocarditis or septicemia from this bacteria, have a high incidence of occult colorectal tumors and passibly upper GI cancers also.

Other Risk factors

- Ureterosigmoidostomy
- Cigarette smoking - is linked to the development of colorectal

- adenomas , particularly after >35 yrs of use.
- Acromegaly
 - Pelvic irradiation
 - Aspirin & other NSAIDs use has been found to have a protective effect (Chemoprevention)
 - Other substance found to have chemopreventive action are → Oral folic acid supplementation, Oral calcium supplementation, Estrogen replacement therapy

474. Centrilobular necrosis of liver may be seen with?

a) Phosphorus

b) Arsenic

c) CCl_4

d) Ethanol

Correct Answer - C

Ans. is 'c' i.e., CCl_4

Zonal necrosis

. Identical regions of all liver lobules are involved. It is divided into :-

i) *Centrizonal (centrilobular) necrosis*

- Necrosis is seen around central hepatic vein. It is seen in *cardiac failure/shock, chloroform toxicity, carbon tetra chloride (ccl_4) toxicity, halothane and viral hepatitis.*

ii) *Peripheral zonal (periportal) necrosis*

- Necrosis is seen around portal tracts. It is seen in *eclampsia and phosphorus poisoning.*

iii) *Midzonal necrosis*

- It is rare and is seen in yellow fever.

475. Gilbert syndrome, true all except ?

- a) Causes cirrhosis
- b) Autosomal dominant
- c) Normal liver function test
- d) Normal histology

Correct Answer - A

Ans. is 'a' i.e., Causes cirrhosis

Gilbert's Syndrome: ?

- o It is an autosomal dominant condition.
- o It is characterized by unconjugated hyperbilirubinemia (normally the bilirubin is transported into liver cells by intracellular proteins. In the liver bilirubin is conjugated. This conjugation is brought about by certain enzymes. In Gilbert's syndrome these enzymes are absent which cause unconjugated hyperbilirubinemia).
- The hyperbilirubinemia is usually precipitated by following conditions – Stress, Fatigue, Alcohol use, reduced calorie intake, intercurrent illness.
- The hepatic biochemical tests are normal except for elevated bilirubin level (serum bilirubin concentration are usually $< 3\text{mg/dl}$)
Embryonal carcinoma The hepatic histology is normal
There is no association with cirrhosis.

476. Councilman bodies are seen ill-

- a) Alcoholic cirrhosis
- b) Wilson's disease
- c) Acute viral hepatitis
- d) Autoimmune hepatitis

Correct Answer - C

Ans. is 'c' i.e., Acute viral hepatitis

Pathological features of acute viral hepatitis

1) Panlobular infiltration of mononuclear cells

This mononuclear infiltration primarily consists of —> *Lymphocytes, Plasma cells, Eosinophils*

Inflammatory infiltrate may spill over into the adjacent parenchyma to cause necrosis of periportal hepatocytes 4 **interface hepatitis**, can occur in both acute and chronic hepatitis.

2) Hepatic cell damage - It consists of

a) Hepatic cell necrosis - The necrosis is usually *focal* or *centirzonal*.

Sometimes severe necrosis such as **bridging** or **subacute** hepatic necrosis occurs.

b) Ballooning of cells - Damaged cells show diffuse swelling known as **ballooning degeneration**.

c) Acidophilic degeneration of hepatocytes - In this single necrotic liver cell has coagulated pink cytoplasm and it shows pyknosis or karyolysis. These are called councilman bodies.

477. Microvesicular fatty liver is caused by ?

a) DM

b) Valproate

c) Starvation

d) IBD

Correct Answer - B

Ans. is 'b' i.e., Valproate

Steatosis

- Accumulation of triglyceride fat droplets within the hepatocytes is known as steatosis or fatty liver. It may be of two types ?
- 1. Microvesicular steatosis → Multiple tiny droplets accumulate that do not displace the nucleus.
- 2. Macrovesicular steatosis → A single large droplet accumulates that displaces the nucleus.

Causes of steatosis

Microvesicular

- Reye's syndrome
- Acute fatty liver of pregnancy
- Jamaican vomiting sickness
- Drugs - valproic acid, tetracycline, nucleoside analogue
- Inborn's disease
- Lysosomal acid lipase deficiency
- Congenital defects of urea cycle enzymes
- Early stage of alcoholic cirrhosis
- Chronic viral hepatitis

Macrovesicular

- Alcoholic liver disease
- DM → insulin resistance

- Lipodystrophy
- PEM, starvation
- Dysbetalipoproteinemia
- TPN, Jejunioileal bypass
- Inflammatory bowel disease
- Syndrome x (obesity, DM, *hypertriglyceridemia*)
- Drugs → CCBs, synthetic estrogens, nucleoside analogues

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478. Peliosis hepatitis is caused by all except?

a) Analgesics

b) Anabolic steroids

c) OC pills

d) Danazol

Correct Answer - A

Ans. is 'a' i.e., Analgesics

- Peliosis hepatitis is a rare condition in which there is primarily sinusoidal dilatation.
- The liver contains blood filled cystic spaces, either unlined or lined with sinusoidal endothelial cells.
- Peliosis hepatitis is associated with many diseases including cancer, TB, AIDS or post transplantation immunodeficiency. It is also associated with exposure to anabolic steroids and rarely, oral contraceptives and danazol.

479. Which one of the following is the most common tumor associated with type I neurofibromatosis ?

- a) Optic nerve glioma
- b) Meningioma
- c) Acoustic schwannoma
- d) Low grade astrocytoma

Correct Answer - A

Ans. is 'a' i.e., Optic nerve glioma

Neurofibromatosis type I (Von-Recklinghewsen disease)

o NF-1 is diagnosed when any two of the following seven signs are present.

1. Six or more cafe-au-lait macules
 - > 5 mm in prepubertal individuals
 - > 15 mm in postpubertal individuals

Cafe-au-lait spots are the hallmark of neurofibromatosis and are present in almost 100% of the patient.
2. Axillary or inguinal freckling
3. Two or more Lisch nodules.
 - Lisch nodules are hamartomas located within the iris.
4. Two or more neurofibroma or one plexiform neurofibroma.
 - Typically involve the skin, but may be situated along peripheral nerves and blood vessels.
 - They are small, rubbery lesions with a slight purplish discoloration of the overlying skin.
5. A distinctive osseous lesion.
 - Sphenoid dysplasia or cortical thinning of long bones.
6. Optic glioma

or optic glioma

7. A first degree relative with NF-1

Other findings are : -

Pseudoarthrosis of tibia.

Scoliosis is the most common orthopaedic problem in NF-1, but is not specific enough to be included as a diagnostic criterion.

Short stature

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480. Perifascicular atrophy of muscle fibres is seen in?

a) Steroid myopathy

b) Dermatomyositis

c) Inclusion body myositis

d) Nemaline myopathy

Correct Answer - B

Ans. is 'b' i.e., Dermatomyositis

- Dermatomyositis is a connective-tissue disease related to polymyositis that is characterized by inflammation of the muscles and the skin.
- It is a systemic disorder that may also affect the *joints, the esophagus, the lungs, and, less commonly, the heart.*
- On the muscle biopsy, there are two classic microscopic findings of dermatomyositis. They are : *mixed B- & T-cell perivascular inflammatory infiltrate and perifascicular muscle fiber atrophy.*
- It is associated with autoantibodies, especially *anti-Jo1 antibody.*

481. A/E are involved in MEN type II A ?

a) Parathyroid

b) Adrenal

c) Thyroid

d) Pituitary

Correct Answer - D

Ans. is 'd' i.e., Pituitary

MEN type 2A (Sipple syndrome)

- Autosomal dominant
- It is characterised by medullary carcinoma of thyroid, pheochromocytoma and hyperparathyroidism.
- It is caused by mutation of the RET proto-oncogene in codon 634.
- Mapped to chromosome 10.
- Mutated codon- cysteine codon
- Type 2A has 3 variants-
 - a) MEN 2A with familial medullary carcinoma thyroid (1st feature of type 2A)
 - b) MEN 2A with cutaneous lichen amyloidosis
 - c) MEN 2A with Hirschsprung disease

482. Autoimmune thyroiditis is associated with all except -

a) *DM*

b) *Myasthenia gravis*

c) *Sj*

d) *Psoriasis*

Correct Answer - D

Ans. is 'd' i.e., Psoriasis

* Autoimmune thyroiditis (Hashimoto thyroiditis) patients are at increased risk for developing other autoimmune disease :-

i) *Endocrine : Type 1 DM, autoimmune adrenalitis.*

ii) *Non-endocrine : SLE, myasthenia gravis, sjogren syndrome.*

* These patients are also at increased risk for development of *B-cell non-Hodgkin lymphoma, especially marginal cell lymphoma of MALT lymphoma.*

483. Hurthle cell carcinoma is a variant of ?

a) Medullary carcinoma

b) Papillary carcinoma

c) Follicular carcinoma

d) Anaplastic carcinoma

Correct Answer - C

Ans. is 'c' i.e., Follicular carcinoma

Follicular carcinoma

- Second most common type of thyroid cancer.
- Hurthle cells are seen.
- Differentiated from follicular adenoma by capsular and/or vascular invasion.
- Unlike in papillary carcinoma, lymphatic spread is rare, and vascular invasion is common in follicular cancers.
- Hurthle cell or oncocytic carcinoma is a variant of follicular carcinoma.

Papillary thyroid carcinoma

- It is the most common type of thyroid cancer.
- Carcinoma cells have nuclei which contain finely dispersed chromatin, which imparts optically clear or empty appearance, giving rise to the ground glass or Orphan Annie eye nuclei.
- Invagination of cytoplasm may give rise to the appearance of intranuclear inclusions (Pseudoinclusions) or intranuclear grooves → the diagnosis of papillary carcinoma is based on these nuclear features.
- Psammoma bodies are present
- Lymphatic metastasis may be seen but involvement of blood vessels is rare.

- The nuclei of papillary carcinoma cells contain finely dispersed chromatin, which imparts an optically clear or empty appearance, giving rise to the designation ground glass or Orphan Annie eye nuclei.

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484. All are germ cell tumors except ?

- a) Seminoma
- b) Leydig cell tumor
- c) Embryonal carcinoma
- d) Endodermal sinus

Correct Answer - B

Ans. is 'b' i.e., Leydig cell tumor

Testicular tumor

* Testicular tumors are divided into two major categories : ?

Germ cell tumors

* *Seminoma* * Embryonal carcinoma * *Yolk sac (endodermal sinus) tumor*

- Spermatocytic seminoma
- Choriocarcinoma
- Teratoma

Sex cord tumors

- Leydig cells tumor
- Sertoli cell tumor

* Approximately 95% of testicular tumors are germ cell tumors.

485. Schiller- Duval bodies is seen in

a) Choriocarcinoma

b) Embryonal cell Ca

c) Endodermal sinus tumour

d) Immature teratoma

Correct Answer - C

Ans. is 'c' i.e., Endodermal sinus tumor

- Yolk sac tumor (endodermal sinus tumor or infantile embryonal carcinoma) → Schiller - Duval bodies.
- Leydig (interstitial) cell tumor -3 Reinke crystalloids.
- Note : - Reinke crystals are also seen in the hilus cell tumor of ovary.

486. Granulomatous mastitis is caused by all except -

a) TB

b) Fungus

c) Staphylococcus

d) Antibodies to milk antigens

Correct Answer - C

Ans. is 'c' i.e., Staphylococcus

Granulomatous mastitis

- * Granulomatous inflammation is present in less than 1% of all breast biopsy specimens.
- * The causes include systemic granulomatous disease (e.g., Wegener granulomatosis or sarcoidosis) that occasionally involve the breast, and granulomatous infections caused by *mycobacteria* or *fungi*.
- * Infections of this type are most common in immunocompromised patients or adjacent to foreign objects such as breast prostheses or nipple piercings.
- * *Granulomatous lobular mastitis* is an uncommon breast-limited disease that only occurs in parous women.
- * The granulomatous inflammation is confined to the lobules, suggesting that it is caused by a *hypersensitivity reaction to antigens expressed by lobular epithelium during lactation*.

487. Type of DCIS resulting in palpable abnormality?

a) Comedocarcinoma

b) Non comedo DCIS

c) Paget's disease

d) None

Correct Answer - C

Ans. is 'c' i.e., Paget's disease

"A palpable mass is present in 50% to 60% of women with Paget disease, and almost all of these women have an underlying invasive carcinoma. In contrast, the majority of women without a palpable mass have only DCIS". — Robbin's

* Actually the question has been framed wrongly as Paget's disease is not a type of DCIS. It is a different lesion. But, it has been explained along with morphology of DCIS.

488. All are good prognostic factors for neuroblastoma except -

a) Trk-A expression absent

b) Absence of 1 p loss

c) Absence of 17 p gain

d) Absence of 11 q loss

Correct Answer - A

Ans. is 'a' i.e., Trk-A expression absent

Intratumoral calcification

DNA ploidy- Hyperdiploid or near-triploid

Trk-A Expression

CD-44 Expression

489. Flexner-Wintersteiner rosette is seen in-

a) Hepatoblastoma

b) Nephroblastoma

c) Neuroblastoma

d) Retinoblastoma

Correct Answer - D

Ans. is 'd' i.e., Retinoblastoma

Rosettes

- Rosettes are pathological findings characterized by a halo or spoke wheel arrangement of cells surrounding a central core or hub.

Type of Rosette

1. Flexner - Wintersteiner Rosettes

- A halo of cells surrounds a largely empty central hub but small cytoplasmic extension from cells project into the lumen.
- It is characteristic of retinoblastoma.
- May also be seen in → Medulloblastoma, Primitive neuroectodermal tumor, Pineoblastoma.

2. Homer Wright rosettes

- A halo of cells surrounds a central hub that contains a meshwork of fibres (neutrophil rich centre). o Homer-Wright rosettes are characteristic of neuroblastomas and medulloblastomas.
- May also be seen in → Primitive neuroectodermal tumors (PNET), Pineoblastomas, Retinoblastomas.

3. True ependymal Rosette

- A halo of cells surrounds an empty lumen.
- It is characteristic of ependymomas.

4. Perivascular pseudorosettes

- A halo of cells surrounds a blood vessel.

- The term pseudo is used because the central structure is not formed from the tumor itself, and represents a nonneoplastic element.
- May be seen in -

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490. Marker of glomus tumor?

a) CD-57

b) Cytokeratin

c) S-100

d) CD-34

Correct Answer - A

Ans. is 'a' i.e., CD-57

- Glomus tumor is a benign mesenchymal neoplasm of the subcutaneous tissue of the distal extremities and head & neck region.
- Immunohistochemistry shows smooth muscle actin, vimentin, collagen IV and CD-57, with little to no expression of neuroendocrine, endothelial or epithelial markers.
- Markers that have been proved consistently negative include cytokeratin, synaptophysin, chromogranin A, CD-31 and S-100 protein.

Glomangioma (Glomuvenous malformation)

- Glomangioma is a variant of glomus tumor
- It is characterized by multiple tumors resembling cavernous hemangioma, lined by glomus cells.
- Glomangioma is blue-red, extremely painful vascular neoplasm.
- It involves a glomeriform arteriovenous anastomosis (glomus body)
- It may be found anywhere in the skin, most often in the distal portion of fingers and toes, especially beneath the nails (subungal).
- Secondary thrombosis and phlebolith formation may occur in these lesions.

491. Most common mediastinal tumor is?

a) Neurogenic tumor

b) Pericardial cyst

c) Hernia

d) Teratoma

Correct Answer - A

Ans. is 'a' i.e., Neurogenic tumors

o Overall most common mediastinal masses are neurogenic tumors (20%) followed by thymomas (19%), primary cysts (18%), lymphomas (13%) and germ cell tumors (10%).

o Most of the mediastinal masses are located in the anterior mediastinum followed by the posterior (25%) and middle (19%).

492. Most common ocular lymphoma ?

- a) T-cell lymphoma
- b) Hodgkin's lymphoma
- c) B-cell NHL
- d) Pre T-cell lymphoma

Correct Answer - C

Ans. is 'c' i.e., B-cell NHL

non-**Hodgkin lymphoma** (NHL) is the **most common** type of **ocular lymphoma**.

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493. Cryoprecipitate is useful in?

a) Hemophilia A

b) Thrombosthenia

c) A fibrogenemi a

d) Warfarin reversal

Correct Answer - C

Ans. is 'c' i.e., Afibrogenemia

- Cryoprecipitate was originally developed for the treatment of hemophilia A. It is no longer the treatment of choice for that disorder because less infectious alternatives are available.
- At the present time, Cryoprecipitate is most often used for correction of hypofibrinogenemia in bleeding patients.

494. Which of the following drugs, is used for Smoking Cessation?

a) Naltrexone

b) Bupropion

c) Buprenorphine

d) Methadone

Correct Answer - B

Answer is B (Bupropion):

Bupropion (along with Varenicline and Nicotine replacement therapy) is a USFDA approved first line agent for pharmacotherapy in Smoking Cessation.

USFDA Approved Agents for Smoking Cessation

- *Nicotine Replacement Therapy* (Transdermal Patch, gum, lozenges, oral inhaler, nasal spray)
- *Bupropion* (Atypical Antidepressant with dopaminergic and noradrenergic activity)
- *Varenicline* (Selective partial agonist at the Alpha4-Beta2 Nicotinic A-Choline receptor that is believed to mediate nicotine dependence)
Clonidine and Nortriptyline are two other medications that have efficacy but are NOT USFDA approved for this indication. These are classified as second line agents.

495. Omalizumab True statement is?

a) Anti-IgE

b) Used as add on therapy in moderate to severe asthma prophylaxis

c) Given subcutaneously

d) All of above

Correct Answer - D

Ans. is 'd' i.e., All of above

- Anti-IgE (Omalizumab).
- Omalizumab is a humanized monoclonal antibody that binds IgE, thereby preventing its binding to the high-affinity IgE receptor and blocking IgE-mediated allergic responses and inflammation.
- approved for patients >12 yr old with moderate to severe asthma,
- It is given every 2-4 wk subcutaneously based on body weight and serum IgE levels.
- Its clinical efficacy as an "add-on" therapy for patients with moderate to severe allergic asthma. It is generally well tolerated, although local injection site reactions can occur.

496. All drugs are available as transdermal patches in India, except

a) Fentanyl

b) Nitroglycerine

c) Hyoscine

d) Nicotine

Correct Answer - C

Ans. is 'c' i.e., Hyoscine

"Transdermal patches of NTG, fentanyl, nicotine and estradiol are available in India, whereas those of isosorbide dinitrate, hyoscine and clonidine are marketed elsewhere". — KDT

497. Maximum first pass metabolism is seen by which route ?

a) Intravenous

b) Intraarterial

c) Rectal

d) Oral

Correct Answer - D

Ans. is 'd' i.e., Oral

- First pass metabolism is seen with oral and rectal routes.
- Maximum first pass metabolism is seen with oral route.
- In rectal route, drug absorbed into external hemorrhoidal veins bypasses liver, but not that absorbed into internal haemorrhoidal veins → First pass metabolism occurs, but less than oral route (avoids first pass metabolism to 50%).
- Most rapid onset of action is seen with I. route.
- Bioavailability by I. V route is 100%.

498. All have high first pass metabolism except ?

a) Lidocaine

b) Propranolol

c) Theophylline

d) Morphine

Correct Answer - C
Ans. is 'c' i.e., Theophylline

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499. Elimination after 4 half lives in first order Kinetics is

a) 84%

b) 93%

c) 80.5%

d) 4.75%

Correct Answer - B

Ans. is 'b' i.e., 93%

Half life Elimination

1 $t_{1/2}$ 50%

2 $t_{1/2}$ 75%

3 $t_{1/2}$ 87.5%

4 $t_{1/2}$ 93.75%

5 $t_{1/2}$ 96.875%

500. In the metabolism of alcohol, high doses of aspirin & phenytoin, mechanism is ?

- a) First pass kinetics
- b) First order kinetics
- c) Zero order kinetics
- d) Second order kinetics

Correct Answer - C

Ans. is 'c' i.e., Zero order kinetics

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501. Which drug can be given subdermally ?

a) Nicotine

b) Fentanyl

c) GTN

d) Progesterone

Correct Answer - D

Ans. is 'd' i.e., Progesterone

- Progesterone can be given in the form of subdermal implant.
- Subdermal contraceptive implants involve the delivery of a steroid progestin from polymer capsules or rods placed under the skin.
- The hormone diffuses out slowly at a stable rate, providing contraceptive effectiveness for 1-5 years.

502. Maximum plasma protein bound drug is ?

a) NTG

b) Verapamil

c) Aspirin

d) GTN

Correct Answer - B

Ans. is 'b' i.e., Verapamil

o Among the given options only verapamil has significant plasma protein binding (see text of the chapter).

503. Study state plasma concentration is achieved after?

a) 2 $t_{1/2}$

b) 3 $t_{1/2}$

c) 4 $t_{1/2}$

d) 5 $t_{1/2}$

Correct Answer - D

Ans. is 'd' i.e., 5 $t_{1/2}$

Steady state:

- If fixed dose of a drug is administered after regular intervals, its plasma concentration starts increasing.
- However, as plasma concentration rises, rate of elimination also starts increasing.
- When rate of administration becomes equal to rate of elimination, plasma concentration stabilizes.

This is called steady state.

1. Time to reach steady state depends on $t_{1/2}$. It takes approximately 5 half-lives.

2. Steady state plasma concentration achieved depends on dose rate.

504. Acidic drugs bind to ?

a) Globulin

b) α -1 glycoprotein

c) Albumin

d) None

Correct Answer - C

Ans. is 'c' i.e., Albumin

- Many natural substances circulate around the body partly free in plasma water and partly bound to plasma proteins, e.g. cortisol, thyroxine.
- Similarly drugs circulate in protein bound and free states, and the significance is that the free fraction is pharmacologically active whereas the protein bound component is a reservoir of drug that is inactive because of this binding.
- Acidic drugs generally bind to plasma albumin.
- Basic drugs bind to α , acid glycoprotein.
- Binding to albumin is quantitatively more important.

505. Duration of action depends on -

a) Clearance

b) Rate of elimination

c) Bioavailability

d) All

Correct Answer - D

Ans. is 'd' i.e., All

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506. When two different chemical act on two different receptors and their responses is opposite to each other on the same cell is called as ?

a) Physiological antagonism

b) Chemical antagonism

c) Reversible antagonism

d) Competitive antagonism

Correct Answer - A

Ans. is 'a' i.e., Physiological antagonism

- Physiological antagonists are those that produce opposite action by acting on different receptors.

Antagonism

- When one drug decreases or inhibits the action of other.
- Effect of drugs $A + B < \text{effect of drug A} + \text{effect of drug B}$.
- Antagonism may be :
 1. Physical
 2. Based on physical property
 3. Chemical
 4. The two drugs react chemically and form an inactive product.
 5. Physiological/functional
 6. The two drugs act on different receptors or by different mechanisms, but have opposite overt effects on the same physiological function ie have pharmacological effect in opposite direction.
 7. Receptor
- The antagonist interferes with binding of the agonist with its receptor or inhibits the generation of response consequent to such binding.

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507. Hofmann elimination is ?

- a) Inactivation of drug by metabolizing enzyme
- b) Unchanged excretion by kidney
- c) Excretion in feces
- d) Inactivation by molecular rearrangement

Correct Answer - D

Ans. is 'd' i.e., Inactivation by molecular rearrangement

Hofmann elimination

- This refers to inactivation of the drug in the body fluids by spontaneous molecular rearrangement without the agency of any enzyme.
- Atracurium is eliminated by this method.

508. Type E adverse reaction is

- a) Toxicity
- b) Augmented effect
- c) Teratogenesis
- d) Withdrawal reaction

Correct Answer - D

Ans. is 'd' i.e., Withdrawal reaction

Type A (Augmented) reaction

- Excess of normal, predictable, dose related pharmacodynamic effect.
- May occur in everyone
- eg - Postural hypotension, hypoglycemia

Type B (Bizarre) reaction

- Due to unusual attributes of the patient interaction with the drug.
- Not dose related
- Not a part of normal pharmacological effect of a drug.
- Occurs only in some people.
- eg - Idiosyncrasy and drug allergy.

Type C (chronic) reaction

- Due to long term exposure
- eg; Analgesic nephropathy, dyskinesia by levodopa, immunosuppression by corticosteroids.

Type D (Delayed) effects

- eg; Carcinogenesis or teratogenesis.

Type E (Ending of use) reaction

- 3 eg; withdrawal reactions with clonidine.

509. Which of the following develop first during dependence of a substance ?

- a) Tolerance
- b) Physical dependence
- c) Psychological dependence
- d) Withdrawal symptoms

Correct Answer - C

Ans. is 'c' i.e., Psychological dependence

Drug dependence

- Drug dependence, as the name suggests, is a state where a person becomes dependent on a drug *despite knowing the harmful effect of the drug*.
- This state arises from repeated, periodic or continuous administration of a drug, that results in harm to the individual.
- The subject feels a desire, need or compulsion to continue using the drug and feels ill if abruptly deprived of it (*withdraw! syndrome*)
- Drug dependency is characterized by the triad of :
 - i. Psychological dependence**
 - First to appear
 - There is emotional distress if the drug is withdrawn
 - ii. Physical dependence**
 - Follows psychological dependence
 - There is physical illness if the drug is withdrawn (*withdraw! symptoms*)
 - iii. Tolerance**
 - Tolerance may be
 - .. Self tolerance → To the drug on which the subject is dependent
 - ?. Cross tolerance → To the other similar (usually) or dissimilar

- (sometimes) drugs.
- The frequency of use of drug is *usually daily* and duration is inevitably greater than 2-3 weeks.

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510. Muscarinic cholinergic receptors are seen at all sites, except ?

a) Stomach

b) CNS

c) Neuromuscular junction

d) Glands

Correct Answer - C

Ans. is 'c' i.e., Neuromuscular junction

Cholinergic receptors

- There are two types of cholinergic receptors :
- Muscarinic → Found at - All postganglionic parasympathetic sites, Few postganglionic sympathetic sites (sweat gland & blood vessels), CNS.
- Nicotinic — Found at - Ganglia (both sympathetic and parasympathetic), Skeletal muscles, Adrenal medulla, CNS

Muscarinic receptors		Nicotinic receptors	
Type	Organ	Type	Organ
M ₁	Gastric gland	N _M	Neuromuscular junction
M ₂	Heart		(Skeletal muscle)
M ₃	Smooth muscles, glands and endothelium	N _N	Ganglia, adrenal medulla
M ₄	CNS		
M ₅	CNS		

511. Type II paralysis in organophosphorous poisoning treatment is ?

- a) Atropine
- b) Oximes
- c) Symptomatic treatment
- d) No treatment

Correct Answer - C

Ans. is 'c' i.e., Symptomatic treatment

- Paralysis due to organophosphate (OP) poisoning can be three types ?
 - 1. Type I (cholinergic phase)**
- Treatment of choice is atropine with or without oximes.
 - 2. Type II**
- It is also called as intermediate syndrome.
- It develops 1-4 days after resolution of acute cholinergic symptoms.
- It is manifested as paralysis and respiratory distress.
- It involves proximal muscles with relative sparing of distal muscle groups.
- The pathogenesis presumed to be dysfunction of neuromuscular junction caused by downregulation of presynaptic and postsynaptic nicotinic receptors due to release of excessive Ach and Ca²⁺ respectively.
- Atropine is ineffective, symptomatic treatment is given.
 - 3. Type III**

512. Wrong about clonidine is -

- a) Alpha 2 receptor agonist
- b) First line for AMID
- c) Sudden withdrawal causes rebound hypertension
- d) Controls loose motions due to diabetic neuropathy

Correct Answer - B

Ans. is 'b' i.e., First line for ADHD

- * Behavioural therapy is the first line therapy for the treatment of ADHD. The first line drug for ADHD is Methylphenidate.
- * Clonidine is a partial agonist with high affinity and high intrinsic activity at α_2 receptors.
- Sudden withdrawal of clonidine may cause life threatening hypertensive crisis.
- * Clonidine is used to control loose motions due to diabetic neuropathy. It may be acting by α_2 receptor mediated enhancement of salt absorption in gut mucosa.

513. Dopamine receptor with inhibitory action ?

a) D₅

b) D₁

c) D₂

d) None

Correct Answer - C

Ans. is 'c' i.e., **D₂**

- Two types of dopamine receptors (D₁, D₂) were originally described. Three more (D₃, D₄, D₅) have now been identified and cloned. All are G protein coupled receptors and are grouped into two families:
- D₁ like: (D₁, D₅) are excitatory
- D₂ like: (D₂, D₃, D₄) are inhibitory

514. Urinary bladder spasmolytic having local anaesthetic property-

a) Tamsulosin

b) Terazosin

c) Oxybutynin

d) Yohimbine

Correct Answer - C

Ans. is 'c' i.e., Oxybutynin

Oxybutynin, a newer antimuscarinic, has high affinity for receptors in urinary bladder and salivary glands along with additional smooth muscle relaxant and local anaesthetic properties.

515. Spasmolytic analgesic is

a) Dicyclomine

b) Physostigmine

c) Tropicamide

d) None

Correct Answer - A

Ans. is 'a' i.e., Dicyclomine

- Antispasmodic (spasmolytic) drugs are used in various colic (pain) e.g. abdominal colic or renal colic.
- Among the given options, dicyclomine is spasmolytic.

Antispasmodic drugs

1. Quaternary compounds - Propantheline, Oxyphenonium, Cl idinium, Pipenzolate, Methylbromide, Isopropamide, Glycopyrrolate.
2. Tertiary amines - Dicyclomine, Valethamate, Pirenzepine.
3. Vasoselective antispasmodic (drugs acting on urinary bladder) - Oxybutynin, Tolterodine, flavoxate. Drotaverine

516. Antigaucomatous drug causing spasm of accommodation

a) Timolol

b) Pilocarpine

c) Dorzolamide

d) Latanoprost

Correct Answer - B

Ans. is 'b' i.e., Pilocarpine

- Ocular side effects of topical agents for POAG
- 13-blocker: Allergic blepheroconjunctivitis, corneal hyposthesia, blurred vision, dry eye, superficial punctate keratitis.
- Cholinomimetics (pilocarpine): Blurred vision, miosis, accommodative spasm, browache.
- Sympathomimetics
- Non-selective (Dipivefrine): Follicular conjunctivitis, rebound congestion, macular edema in aphakic
- Apraclonidine: Allergies, lid retraction, follicular conjunctivitis, fluctuation in visual acuity
- Brimonidine: Ocular allergy, conjunctival blanching.
- Carbonic anhydrase inhibitors (Dorzolamide, brinaolamide): Punctate keratitis, ocular allergies.
- Prostaglandin analogues (Latanoprost): Punctate keratitis, iris pigmentation.

517. Besides its properties of decreasing intraocular pressure, timolol is preferred in the treatment of glaucoma because it

- a) Produces no miosis
- b) Possess membrane stabilizing activity
- c) Increases outflow of aqueous humor
- d) Is a selective beta-adrenoceptor blocker

Correct Answer - A

Ans. is 'a' i.e., Produces no miosis

Advantages of topical β -blockers (timolol) over miotics (pilocarpine)

No change in pupil size (no miosis) I.O.T.	→	No fluctuation in
No induced myopia once/twice daily applications	→	Convenient
No ciliary spasm (no spasm of accommodation) side effects.	→	Few systemic

518. Uses of alpha-2-agonist are all except?

a) Sedation

b) Glaucoma

c) Benign Hyperplasia of prostate

d) Hypertension

Correct Answer - C

Benign Hyperplasia of prostate.

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519. Beta 1 antagonist used in congestive cardiac failure ?

a) Atenolol

b) Metoprolol

c) Salbutamol

d) Terbutaline

Correct Answer - B

Ans. is 'b' i.e., Metoprolol

β -blockers used in CHF

Cardioselective **β -blockers (β_1 -blockers)**

Atenolol Bisoprolol Celiprolol Esmolol

Metoprolol Nebivolol Acebutalol Betoxalol

Non-selective blocker with α -blocking acting

Carvedilol Dilovalol Medroxalol Bucindolol

Labetalol Bevantolol Nipradilol

- Among all these following three are used most commonly

1. Carvedilol

2. Metoprolol

3. Bisoprolol

520. Which of the following is not a cardioselective beta blocker ?

a) Nebivolol

b) Atenolol

c) Betaxolol

d) Oxprenolol

Correct Answer - D
Ans. is 'd' i.e., Oxprenolol

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521. Which of the following is second generation 3 blocker?

a) Propranolol

b) Timolol

c) Nodalol

d) Atenolol

Correct Answer - D
Ans. is 'd' i.e., Atenolol

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522. The side effects of digitalis are all except ?

a) Ventricular tachycardia

b) Vasodilatation

c) Nausea and vomiting

d) Ventricular Bigemini

Correct Answer - B

Ans. is 'b' i.e., Vasodilatation

Digitalis causes mild vasoconstriction (not vasodilatation).

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523. Nesiritide cause vasodilatation through ?

a) cAMP

b) cGMP

c) ATP

d) K⁺ ions

Correct Answer - B

Ans. is 'b' i.e., cGMP

Nesiritide

- Nesiritide is a recombinant form of human BNP (Brain natriuretic peptide) that dilates the arterial and venous circulation in a balanced manner.
- It is only available for parenteral administration (oral bioavailability is poor)
- It has natriuretic, diuretic and vasodilator properties.
- It does not have inotropic action.
- It has been approved for use in acute cardiac failure.
- Its $V_{1/2}$ is only 18 minutes.
- It acts by increasing cGMP in smooth muscle cells.
- The main side effect is hypotension.
- The limiting factor is its breakdown by enzyme, neutral endopeptidase (NEP) - inhibitors of this enzyme ecdotril are being tested for CHF.

524. Which of the following is renin inhibitor ?

a) Losartan

b) Benazepril

c) Remikiren

d) Imidapril

Correct Answer - C

Ans. is 'c' i.e., Remikiren

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525. Verapamil is used in all, except ?

- a) Angina pectoris
- b) Atrial fibrillation
- c) Ventricular tachycardia
- d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Ventricular tachycardia

- **Use of Verapamil as an antiarrhythmic**
- **PSVT**
- **Angina pectoris** —All CCB's are effective in reducing frequency and severity of classical as well as variant angina. It is beneficial in angina in the following way
- **Classical angina** Reduces cardiac work, mainly as a result of reduced afterload.
- **Variant angina Prevent arterial spasm.**
- Hypertension
- Hypertrophic cardiomyopathy
- Suppress nocturnal leg cramps
- Migraine

526. Maximum tachycardia is seen with

a) Nifedipine

b) Verapamil

c) Propranolol

d) Amlodipine

Correct Answer - A

Ans. is 'a' i.e., Nifedipine

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527. Which is true about calcium channel blockers -

- a) Verapamil causes reflex tachycardia
- b) Diltiazam causes reflex tachycardia
- c) Nifedipine causes reflex tachycardia
- d) Nifedipine has longer $t^{1/2}$ than felodipine

Correct Answer - C

Ans. is 'c' i.e., Nifedipine causes reflex tachycardia

DHPs (nifedipine) cause reflex tachycardia.

o Felodipine - it differs from nifedipine in having greater vascular selectivity, large tissue distribution and longer $t^{1/2}$.

528. Sublingual nitroglycerin for treatment of acute chest pain can cause ?

a) Hypertension

b) Headache

c) Bradycardia

d) Sexual dysfunction

Correct Answer - B

Ans. is 'b' i.e., Headache

- Due to vasodilatation there may be tachycardia, palpitation, flushing, headache, dizziness and fainting may occur.

Adverse effects

- Due to vasodilatation tachycardia, palpitation, flushing, headache, dizziness and fainting may occur.
- Rashes are common particularly with pentaerythritol tetranitrate.
- Methemoglobinemia.
- Sildenafil causes dangerous potentiation of nitrate action (cGMP is increased by nitrates and its breakdown by phosphodiesterase is inhibited by sildenafil → marked accumulation of cGMP) - severe hypotension, MI and death may occur the only contraindications of nitrates use are hypotension or simultaneous use of sildenafil.

529. Drug of choice for classical angina attack ?

a) CCBs

b) β -blocker

c) GTN

d) Prazocin

Correct Answer - C

Ans. is 'c' i.e., GTN

- For immediate pre-exertional prophylaxis and acute attack
- Sublingual glycerol trinitrate (Drug of choice)

530. Shortest acting calcium channel blocker ?

a) Verapami I

b) Amlodipine

c) Nimodipinc

d) Diltiazam

Correct Answer - C

Ans. is 'c' i.e., Nimodipine

- Nimodipine is shortest acting CCB. → Katzung 10/1/2 - 191
- Nimodipine selectively relaxes cerebral vasculature - can be used in subarachnoid haemorrhage or ruptured congenital intracranial aneurism.
- Amlodipine is longest acting CCB.
- Amlodipine has maximum oral bioavailability.
- Nisoldipine has minimum oral bioavailability.

531. Treatment of choice for Prinzmetal's angina

a) Nitroglycerine

b) CCBs

c) P-blockers

d) Prazosin

Correct Answer - A

Ans. is 'a' i.e., Nitroglycerine

Treatment of variant angina

- Prinzmetal's variant angina is due to spasm of coronary vessels.
- The drugs which dilate the coronary vessels, are the main treatment of Prinzmetal's angina.
- Drugs are :
 - 1. Nitrates
 - 2. Calcium channel blockers (verapamil, diltiazem)
- Nitroglycerin is considered the drug of choice for the patient with variant angina.
- Prazosin a selective α -blocker may also be used because it prevents a mediated vasospasm.
- β -blockers are contraindicated because they cause constriction of coronary artery due to unopposed α mediated vasoconstriction.

Prevention of variant angina

- In contrast Nitrates are not used for the prevention of variant angina because of development of tolerance.
- CCBs are the DOC for prevention.

532. Drug used for sympathectomy in experimental animals is ?

a) Guanethidine

b) Atropine

c) Diazoxide

d) Thebaine

Correct Answer - A

Ans. is 'a' i.e., Guanethidine

- Guanethidine is used for experimental sympathectomy.
- Guanethidine a polar guanidine compound which is taken up into adrenergic nerve endings by active amine transport and has three important facets of action :
 - Displaces NA from storage granules stoichiometrically.
 - Inhibits nerve impulse coupled release of NA
 - Engages and blocks NA uptake mechanism at the axonal membrane.
- It was used for sympathectomy in experimental animal.

533. Side effect of salmeterol is ?

a) Tremor

b) Seizure

c) Hypertension

d) Hyperkalaemia

Correct Answer - A

Ans. is 'a' i.e., Tremor

- The most common side effects are muscle tremor and palpitation
- **Hypokalemia**
- **Hyperglycemia**
- **Tolerance**
- **Throat irritation**
- **Ankle edema.**
- Other side effects are anxiety, headache, muscle cramps, dry mouth, arrhythmia, flushing (due to vasodilatation), hypoxemia, MI, disturbance of sleep and behavior.

534. All are the following are the functions of PGEI except-

a) Erectile dysfunction

b) Erectile dysfunction

c) Induction of puberty

d) PDA

Correct Answer - C

Ans. is 'c' i.e., Induction of puberty

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535. Which drug is to be given in a truck driver for rhinitis ?

a) Cetrezine

b) Hydroxyzine

c) Promethazine

d) Buclizine

Correct Answer - A
Ans. is 'a' i.e., Cetrezine

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536. Which second generation antihistaminic does not produce an active metabolite

a) Loratidine

b) Terfenadine

c) Cetrizine

d) None

Correct Answer - C

Ans. is 'c' i.e., Cetrizine

Important facts about antihistaminics

- Loratidine, desloratidine, ebastine and mizolastine are amongst the longest acting antihistaminic (duration of action 24 hrs).
- All second generation antihistaminics are metabolized to active products except cetirizine and mizolastine.
- Loratidine has least CNS depression action.
- Acrivastine is the shortest acting antihistaminic.
- Olopatodine is a recently approved topical H₁-antihistaminic used as nasal spray for seasonal allergic rhinitis.

537. Prodrug of cetirizine is

a) Foxefenadone

b) Terfenadine

c) Hydroxyzine

d) Azelastine

Correct Answer - C

Ans. is 'C' i.e., Hydroxyzine

- Cetirizine is a metabolite of Hydroxyzine with a marked affinity for peripheral H₁ receptors; penetrates the brain poorly.
- It inhibits the release of histamine and of cytotoxic mediators from platelets as well as eosinophil chemotaxis during the secondary phase of allergic response.
- It is indicated in upper respiratory allergies, pollinosis, urticaria, and atopic dermatitis; also used as an adjuvant in seasonal asthma.

538. Aminophylline inhibits which enzyme ?

a) MAO

b) Alcohol dehydrogenase

c) Phosphodiesterase

d) Cytochrome P450

Correct Answer - C

Ans. is 'c' i.e., Phosphodiesterase

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539. Beta 2 agonist used in rescue therapy in acute respiratory conditions are all except -

a) Terbutaline

b) Salbutamol

c) Bambuterol

d) Ketotifen

Correct Answer - D
Ans. is 'd' i.e., Ketotifen

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540. Beta2-agonist cause all except

a) Hyperkalemia

b) Hyperglycemia

c) Tremor

d) Palpitation

Correct Answer - A

Ans. is 'a' i.e., Hyperkalemia

Adverse effects of inhalational agonists

- The most common side effects are muscle tremor and palpitation
- Hypokalemia
- Hyperglycemia
- Tolerance
- Throat irritation
- Ankle edema
- Other side effects are anxiety, headache, muscle cramps, dry mouth, arrhythmia, flushing (due to vasodilatation), hypoxemia, MI, disturbance of sleep and behaviour.

541. Which of the following is not used in acute attack of severe pain due to gout ?

a) Indomethacine

b) Colchicine

c) Febuxostat

d) Corticosteroids

Correct Answer - C

Ans. is 'c' i.e., Febuxostat

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542. Abatacept is ?

- a) TNF alpha inhibitor
- b) Inhibitor of co-stimulation of T cells
- c) IL-1 receptor antagonist
- d) Monoclonal antibody against IL-6 receptor

Correct Answer - B

Ans. is 'b' i.e., Inhibitor of co-stimulation of T cells

T-cell costimulatory blockers

Abatacept

- It is a fusion protein that combines the extracellular domain of the molecule CTLA4 (CD 154) with the Fc portion of a human immunoglobulin.
- It interferes with the interactions between antigen presenting cells and T lymphocytes. Therefore, it affects early stages in the pathogenic cascade of event in RA.
- CTLA4 has high affinity for CD 28 when abatacept binds to CD28 on T cell surface, it prevents the second signal from being delivered, thus turning down the T cell response.
- Additional effects are decreasing the production of T cell-derived cytokines including TNF.

543. NSAIDS cause gastric ulcer because ?

- a) They inhibit COX - 2 enzyme
- b) They inhibit mucus production
- c) They increase HCl production
- d) They delay gastric emptying

Correct Answer - B

Ans. is 'b' i.e., They inhibit mucus production

- Prostaglandins function as natural ulcer protectives by enhancing gastric mucus and HCO_3^- production, as well as by improving mucosal circulation and health. The ulcerogenic action of NSAIDs may be due to loss of this protective influence.
- PGE analogues are cytoprotective at low doses and inhibit gastric acid secretion at higher doses. NSAIDs inhibit prostaglandin secretion and thus antagonizes its cytoprotective effect.
- Misoprostol is used in NSAIDs induced ulcers.

544. Which of the following is a mineralocorticoid antagonist ?

a) Spironolactone

b) Inamrinone

c) Nicorandil

d) Ketorolac

Correct Answer - A

Ans. is 'a' i.e., Spironolactone

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545. Thiazides act on ?

a) PCT

b) DCT

c) Glomerulus

d) Descending limb of loop of Henle

Correct Answer - C

Ans. is 'c' i.e., DCT

- Tubular absorption can be divided into four sites.

Site 1- Proximal tubule

- Four mechanisms of Na⁺ transport have been defined in this segment ?
- Direct entry of M.⁺ along electrochemical gradient.
- Na⁺-K⁺ symport along with active reabsorption of glucose, aminoacids, organic anions and PO₄³⁻.
- Exchange with W by Na⁺/W exchanger located in the luminal membrane of proximal tubule (PT) epithelial cells. The PT cells secrete W with the help of carbonic anhydrase. W ion exchanges with Na⁺ present in tubular fluid through Na⁺-H⁺ exchanger (antiporter) and forms H₂CO₃ by combining with HCO₃⁻. This H₂CO₃ is broken into H₂O + CO₂ by *brush border carbonic anhydrase*; both CO₂ and H₂O diffuse inside the cell and recombine to form H₂CO₃ with the help of *intracellular carbonic anhydrase*. This H₂CO₃ is the source of F1⁺. The dissociated HCO₃⁻ in the cell is transported to cortical E.C.F. by basolateral membrane Na⁺-F⁻-HCO₃⁻ symporter resulting in net reabsorption of NaHCO₃.

Carbonic anhydrase inhibitors (acetazolamide) act predominantly in PCT and inhibit NaHCO₃ reabsorption.

- The disproportionately large HCO_3^- , acetate, PO_4^{3-} , passive driving forces for Cl^- to diffuse through the paracellular pathway, particularly in the later PT. This takes Na^+ and H_2O along to maintain electrical neutrality and isotonicity; reabsorption in PT is isotonic.
- Osmotic diuretics (mannitol) are solutes which are not absorbed in proximal tubule and therefore retain water.

Site II Ascending limb of loop of Henle

- The thick ascending limb can be distinguished into two distinct portion.
- Medullary portion lined by cuboidal cells.
- Cortical portion lined by flattened cells.
- Both portions are relatively impermeable to water but absorb salt actively and thus dilute tubular fluid.
- In the medullary portion a distinct luminal membrane carrier transports ions in ratio of $\text{Na}^+:\text{K}^+:\text{2Cl}^-$. The sodium enters the cell is pumped to ECF by $\text{Na}^+ \text{ATPase}$ at the basolateral membrane.
- This $\text{Na}^+:\text{K}^+:\text{2Cl}^-$ symport is inhibited by loop diuretics (eg- Furosemide).
- In addition, a $\text{Na}^+:\text{Cl}^-$ symporter moves Cl^- down its electrochemical gradient into ECF and carries Na^+ along.

Site III - cortical diluting segment of loop of Henle and early DT

- This segment is also impermeable to H_2O and continues to absorb salt through $\text{Na}^+:\text{Cl}^-$ symporter.
- Thiazide diuretics act at this site.

Site IV - late distal tubule and collecting duct

- In late DT and CD, Na^+ is actively reabsorbed; the cation-anion balance being maintained partly by passive Cl^- -diffusion and partly by secretion of K^+ and Fr .
- Absorption of Na^+ at this site occurs through a specific amiloride sensitive Net^+ channel and is controlled to a large extent by aldosterone.
- K^+ sparing diuretics act at this site.
- Collecting tubule is the most important site of H^+ secretion by the kidney and the site at which virtually all diuretic induced changes in K^+ balance occur - as H^+ secretion occurs in exchange of Na^+ , higher the Na^+ load in CD higher will be K^+ excretion in urine $\rightarrow$ Diuretics

which act on PCT (maximum absorption of Na^+ occurs at PCT) like acetazolamide will cause maximum kaliuresis (IC excretion in urine).

- The principal cells are the major sites of Na^+ , IC^- , and water transport, and intercalated cells are the primary sites of H^+ secretion.
- The collecting tubule is also the site at which the final urine concentration is determined. ADH (vasopressin) controls the permeability of this segment to water by regulating the insertion of preformed water channels (aquaporin2, AQP2) into the apical membrane via a G protein - coupled cAMP - mediated process.
- ADH also stimulates the insertion of urea transporter UT1 molecules into the apical membranes of medullary collecting tubule cells. Urea concentration in the medulla plays an important role maintaining the high osmolarity of the medulla and in the concentration of urine.

546. High dose of morphine is used without much danger in ?

a) Gall bladder surgery

b) Labour

c) Myocardial infarction

d) Head injury

Correct Answer - C

Ans. is 'c' i.e., Myocardial infarction

- Morphine should be given promptly in myocardial infarction to allay apprehension and reflex sympathetic stimulation.
- Morphine should be used cautiously in gall bladder and biliary tract dysfunction as it causes spasm of sphincter of oddi and can cause acute rise of intrabiliary pressure.
- Used during labour, morphine can cause neonatal respiratory distress.
- Head injury is a contraindication for morphine use.

547. Cardiac conduction defect seen with Tricyclic antidepressants are due to ?

- a) NE & serotonin uptake inhibitor
- b) Antimuscarinic action on heart
- c) Only NE uptake inhibition
- d) Both NE uptake inhibition and antimuscarinic action on heart

Correct Answer - D

Ans. is 'd' i.e., Both NE uptake inhibition and antimuscarinic action on heart

- The commonest cardiovascular effect of tricyclic antidepressant overdose is sinus tachycardia.
- Due to inhibition of norepinephrine reuptake and the anticholinergic action.
- However, the most important toxic effect of tricyclics is the slowing of depolarisation of the cardiac action potential by inhibition of the sodium current and this delays propagation of depolarisation through both myocardium and conducting tissue.
- This results in prolongation of the QRS complex and the PR/QT intervals with a predisposition to cardiac arrhythmias.
- This inhibition of sodium flux into myocardial cells can occur to such an extent that depressed contractility can result and this, coupled with the reduction in peripheral resistance, contributes to hypotension.

548. Remission with SSRI or TCA patient again having relapse. There may be deficiency of ?

a) Pyridoxine

b) Cobalamine

c) Ascorbate

d) Retinol

Correct Answer - B

Ans. is 'b' i.e., Cobalamine

- Subjects with vitamin B₁₂ deficiency and depression may present with history of past episodes with spontaneous
- remission or response to treatment with antidepressants and later recognition or development "B₁₂ deficiency"
- Studies have found that some people with depression may have low levels of folic acid, vitamin B₁₂ or vitamin D.

549. Sedative with GABA facilitating action but without anticonvulsant and muscle relaxant properties and no effect on sleep ?

a) Diazepam

b) Zolpidem

c) Phenobarbitone

d) Buspirone

Correct Answer - B

Ans. is 'b' i.e., Zolpidem

Among the given options, three are sedative-hypnotic with GABA facilitatory action -

- Diazepam (a benzodiazepine) → But it also has anticonvulsant and muscle relaxant property. it) Phenobarbitone → But it has anticonvulsant property.
- Zolpidem
 - Has no anticonvulsant and muscle relaxant property and have no effect on sleep architecture. Zolpidem
 - Zolpidem is a non-benzodiazepine hypnotic.
 - Minimal suppressive effect on REM sleep architecture is not disturbed.

550. Lithium directly affects which ion ?

a) Sodium

b) Potassium

c) Magnesium

d) Calcium

Correct Answer - A

Ans. is 'a' i.e., Sodium

- Diuretics (particularly thiazides) decrease the renal excretion of lithium and thus may result in toxicity. This is due to increased reabsorption of Na⁺ and lithium ions (as a compensatory response to excessive loss of Na⁺).

Interactions of lithium

1. Diuretics (thiazide, furosemide) by causing Na⁺ loss promote proximal tubular reabsorption of Na⁺ as well as Li⁺ → Plasma level of lithium rises.
2. Tetracyclines, NSAIDs and ACE inhibitors cause lithium retention.
3. Lithium tends to enhance insulin/sulphonylurea induced hypoglycemia (lithium has insulin like action on glucose metabolism).
4. Lithium inhibits the action of ADH on distal tubules → causes nephrogenic DI.
5. Lithium reduce thyroxine synthesis by interfering iodination of tyrosine.

551. Which of the following is an antipsychotic drug ?

a) Flupenthixol

b) Rasagiline

c) Clobazam

d) Divalproex

Correct Answer - A

Ans. is 'a' i.e., Flupenthixol

Antipsychotics (Neuroleptics)

- Antipsychotics are a group of psychoactive drugs commonly used to treat psychosis, e.g. *Schizophrenia*.
- Antipsychotic drugs are divided into:
 - Typical antipsychotics (first generation antipsychotics)
 - 1. Phenothiazines - Chlorpromazine, Thioridazine, Trifluoperazine, Fluphenazine.
 - 2. Thioxanthenes - Thiothixene, Flupenthixol.
 - 3. Butyrophenones - Haloperidol, Trifluoperidol, Penfluridol.
 - 4. Other heterocyclics - Pimozide, Loxapine, Sulpiride

B) Atypical

- antipsychotics (second generation antipsychotics)
 - 1. Clozapine 3. Olanzapine 5. Aripiprazole
 - 2. Risperidon 4. Quetiapine 6. Ziprasidone

552. Which of the following is a TCA ?

a) Amoxapin

b) Citalopram

c) Venlafaxine

d) Bupropion

Correct Answer - A

Ans. is 'a' i.e., Amoxapine

Antidepressants

A. Typical

- Tricyclic antidepressants
 - NA + 5HT reuptake inhibitors :- Imipramine, Trimipramine, Amitriptyline, Clomipramine.
 - Predominantly NA reuptake inhibitors :- Desipramine, Nortriptyline, Amoxapine, Reboxetine. b) Selective serotonin reuptake inhibitors :- Fluoxetine, Paroxetine, Sertraline, Citalopram, Escitalopram.
- B . Atypical :- Trazodone, Mianserine, Mirtazapine, Venlafaxine, Duloxetine, Tianeptine, Amineptine, Bupropion.
- C. MAO inhibitors :- Tranylcypromine, Moclobemide, Clorgyline.

553. Which of the following is a tricyclic antidepressant?

a) Venlafaxine

b) Fluoxetine

c) Doxepin

d) Citalopram

Correct Answer - C
Ans. is 'c' i.e., Doxepin

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554. Visual field monitoring is important before starting?

a) Vigabatrin

b) Topiramate

c) Valproic acid

d) Carbamazepine

Correct Answer - A
Ans. is 'a' i.e., Vigabatrin

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555. True about lamotrigene ?

a) Decreased efficacy in depression

b) First choice in absence seizure

c) $t_{1/2}$ is 24 hrs

d) Not metabolised in liver

Correct Answer - C

Ans. is 'c' i.e., $t_{1/2}$ is 24 hrs

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556. Which is a GABA transaminase inhibitor ?

a) TCA

b) Sertaline

c) Valproate

d) Gabpentin

Correct Answer - C

Ans. is 'c' i.e., Valproate

Mechanism of action

Facilitation of GABA mediated Cl⁻ channel opening

- Barbiturates and benzodiazepines bind to GABA_A receptor and open Cl⁻ channel.
- Valproate and vigabatrine inhibit enzyme GABA transaminase which degrades GABA & conc. of GABA.
- Tiagabine inhibits the uptake of GABA into the neurones by inhibiting GAT-1.
- Gabapentine enhances the GABA release from synaptic vesicles.

557. Side effect of topiramate is ?

a) Weight loss

b) Visual impairment

c) Insomnia

d) Hemolysis

Correct Answer - A

Ans. 'a' i.e., Weight loss

Topiramate

- Weak carbonic anhydrase inhibitor with broad-spectrum anticonvulsant activity.
- Acts via - prolongation of Na⁺ channel inactivation, GABA potentiation, glutamate receptor antagonism, neuronal hyperpolarisation via K⁺ channels.
- Used in SPS, CPS, GTCS, myoclonic epilepsy, prophylaxis of migraine.
- Readily absorbed orally and mainly excreted in the urine.
- T_{1/2} - 24hrs.
- Adverse effects impairment of attention, sedation, ataxia, word-finding difficulties, poor memory, *weight loss*, paresthesias, and renal stones.

558. Due to which side effect felbamate can be discontinued?

a) Aplastic anemia

b) Renal impairment

c) Gastrointestinal disorder

d) Seizures

Correct Answer - A

Ans. is 'a' i.e., Aplastic anemia

- Two severe side effects of felbamate are for which FDA has issued warning that drug not be used are hepatic failure and aplastic anemia

559. Which is not used in status epilepticus?

a) Lorazepam

b) Phenytoin

c) Phenobarbitone

d) Valproate

Correct Answer - D
Ans. is 'd' i.e., Valproate

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560. All are side effects of Clozapine, except ?

- a) Granulocytopenia
- b) Seizures
- c) Sedation
- d) Extrapramidal side effects

Correct Answer - D

Ans. is 'd' i.e., Extrapramidal side effects

Side effects of clozapine

- Agranulocytosis
- Unstable BP & Tachycardia
- Worsening of diabetes
- Seizures
- Urinary incontinence
- Hypersalivation (sialorrhoea)
- Weight gain
- Sedation

561. Most common side effect of haloperidol ?

a) Hypotension

b) Akathasia

c) Dryness of mouth

d) Tic disorder

Correct Answer - B

Ans. is 'b' i.e., Akathasia

- 75% of patients experience extrapyramidal symptoms (Akathisia, Parkinsonism, acute muscular dystonia) with all classical (typical) antipsychotics.
- Haloperidol is a typical antipsychotic.

562. All are produced by μ receptors except -

a) Euphoria

b) Sedation

c) Dysphoria

d) Constipation

Correct Answer - C

Ans. is 'c' i.e., Dysphoria

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563. Phase II block is seen with -

a) SCh infusion

b) Single dose SCh

c) Mivacurium

d) None of the above

Correct Answer - A

Ans. is 'a' i.e., SCh infusion

- Under certain conditions depolarizing agents produce dual mechanism of neuromuscular blockade which can be divided into two phases :
 - a. Phase I block**
 - Rapid in onset
 - Result from persistent depolarization of muscle end plate.
 - b. Phase II block**
 - Slow in onset
 - Results from desensitization of receptor to ACh.
 - Phase II block is seen when fluorinated anaesthetics have been given or when SCh is injected in high dose or infused continuously.
 - SCh also produces phase II block in patients with atypical or deficient pseudocholinesterase.

564. Anandamide is ?

- a) Opioid
- b) CK 1 antagonist
- c) D2 blocker
- d) Cannabinoid neurotransmitter

Correct Answer - D

Ans. is 'd' i.e., Cannabinoid neurotransmitter

- Anandamide, also known as N-arachidonylethanolamine or AEA, is an endogenous cannabinoid neurotransmitter.
- The name is taken from the Sanskrit word *Ananda*, which means "bliss, delight", and amide.
- It is synthesized from N-arachidonoyl phosphatidylethanolamine by multiple pathways.
- It is degraded primarily by the fatty acid amide hydrolase (FAAH) enzyme, which converts anandamide into ethanolamine and arachidonic acid.
- As such, inhibitors of FAAH lead to elevated anandamide levels and are being pursued for therapeutic use.

565. Drug of choice for reversal of muscle relaxant after anaesthesia

a) Pralidoxine

b) Neostigmine

c) Atropine

d) None

Correct Answer - B

Ans. is 'b' i.e., Neostigmine

Reversal of neuromuscular block

- Nondepolarising muscle relaxants have antagonistic action on acetylcholine
- Anticholinesterases act by inhibiting the action of acetylcholinesterase (an enzyme that degrades acetylcholine by causing its hydrolysis).
- Anticholinesterases thus increase the level of acetylcholine at the neuromuscular junction.
- Neostigmine also has some *additional direct action* on cholinergic receptors i.e., it depolarizes motor end plate.
- It does not increase the release of ACH. Accumulated ACH acts on presynaptic muscarinic autoreceptors and inhibits the release of ACH.

566. Sugamadex is used for ?

- a) Organophosphate poisoning
- b) Reversal of NM blockers
- c) Treatment of local anaesthetic poisoning
- d) Treatment of central anticholinergic syndrome

Correct Answer - B

Ans. is 'b' i.e., Reversal of NM blockers

- Sugamadex is a novel reversing agent developed for terminating the action of nondepolarizing muscle relaxants *rocuronium* and *vecuronium*.
- It is a modified γ -cyclodextrin with high affinity for rocuronium and vecuronium.
- It encapsulates one molecule of NM blocker within its molecule forming an inactive chelate which is excreted in urine with VA of 2 hours.
- Its side effects are mild precordial pain, nausea, alteration of taste and rarely allergy.

567. Benzylisoquinoline muscle relaxant is ?

a) Vecuronium

b) Rocuronium

c) Doxacurium

d) Pancuronium

Correct Answer - C

Ans. is 'c' i.e., Doxacurium

- Competitive (nondepolarizing) blockers are of two types -
- Benzylisoquinolone derivatives
- This includes → d-TC, doxacurium, atracurium, cisatracurium, mivacurium, metocurine.
- These drugs have tendency to release histamine and to block autonomic ganglion.
- Amminio steroid derivatives
- This include pancuronium, rocuronium, vecuronium, pipecuronium, rapacuronium.
- These drugs do not block autonomic ganglia and have minimal histamine releasing property.

568. Which anaesthetic agent has maximum MAC ?

a) Ether

b) Methoxyfluorane

c) N₂O

d) Halothane

Correct Answer - C

Ans. is 'c' i.e., N₂O

Minimal alveolar concentration

- It is the lowest concentration of the anaesthetic in pulmonary alveoli needed to produce immobility in response to a painful stimulus (surgical incision) in 50% individuals.
- It is the measure of potency of inhalation GAs.

Blood : gas partition coefficient

- It is the measure of solubility of agent in blood.
- It determines the speed of onset and recovery.
- Higher the blood : gas partition coefficient, lesser the speed of induction and recovery - 4 more blood soluble agents have slower induction and recovery.

Oil : gas partition coefficient

- It is the measure of lipid solubility of the agent, and therefore solubility in the fat - rich tissues of the CNS.
- This equates with the potency of individual agents.
- There is a direct relationship between the minimum alveolar concentration (MAC) value of inhaled anaesthetic agents and lipid solubility in terms of the oil/gas partition coefficient.
- Remember

- Maximum MAC -4 N₂O
- Minimum MAC Halothane (Previously it was methoxyflurane, but it is not used now)
- Maximum blood : gas partition coefficient -4 Ether
- Minimum blood: gas partition coefficient Desflurane
- Maximum oil : gas partition coefficient Halothane (Previously it was methoxyflurane, but it is not used now)
- Minimum oil : gas partition coefficient -->N₂O°

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569. Increased insulin secretion from beta cells is done by ?

a) Metformin

b) Pramlidine

c) Repaglinide

d) Pioglitazone

Correct Answer - C

. Ans. is 'c' i.e., Repaglinide

- Oral hypoglycemic drugs may be divided into two groups:?

1. Group 1

- These drugs reduce plasma glucose by stimulating insulin production, therefore called insulin secretagogues.
- Hypoglycemia is a well known side effect.

Examples are:

- 1. Sulfonylureas: first generation (chlorpropamide, tolbutamide); second generation (Glibenclamide, glyburide, glipizide, gliclazide).
- 2. Megalitinide/D-phenylalanine analogues: Nateglinide, Repaglinide.

2. Group 2

- These drugs reduce blood glucose without stimulating insulin production, therefore are insulin non-secretagogues.
- These drugs do not cause hypoglycemia when used alone and can cause hypoglycemia, only when used with other oral hypoglycemics.

Examples are:

- 1. **Biguanides:** Metformin, Phenformin
- 2. **Thiazolidinediones:** Rosiglitazone, Pioglitazone, Troglitazone.
- 3. **α-glucosidase inhibitors:** Acarbose, miglitol.

570. Which antidiabetic drug is used both for type I & II DM-

a) Sulphonylureas

b) Metformin

c) Acarbose

d) Pramlinitide

Correct Answer - D

Ans. is 'd' i.e., Pramlinitide

o Pramlinide is the only approved drug, beside insulin, to be used in both type-I and type-2 DM.

571. True about sitagliptin is all except

- a) Used in type II DM
- b) Used in combination with other oral hypoglycaemic
- c) Cannot be used orally
- d) All are true

Correct Answer - C

Ans. is 'c' i.e., Cannot be used orally

Sitagliptin

- This is *orally active inhibitor of DPP-4*.
- It prevents degradation of endogenous GLP- 1 and other incretins, potentiating their action, resulting in limitation of postprandial hyperglycemia.
- It is used in *type 2 DM*.
- Other DPP-4 inhibitor is **vildagliptin**.

572. At mu receptor, buphrenorphine is?

a) Partial agonist

b) Partial antagonist

c) Complete agonist

d) Complete antagonist

Correct Answer - A

Ans. is 'a' i.e., Partial agonist

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573. Thiazolidinedione is associated with increased risk of?

a) Heart failure

b) Pulmonary fibrosis

c) Myocarditis

d) renal dysfunction

Correct Answer - A

Ans. is 'a' i.e., Heart failure

Thiazolidinediones adverse effects

- Plasma volume expansion, edema, weight gain, headache, myalgia and mild anemia.
- Few cases of hepatic dysfunction and some cardiovascular events have been reported - CHF may be precipitated → they are contraindicated in liver disease and in CHF.
- Rosiglitazone has been found to increase the risk of fracture, especially in elderly women.
- Glitazones with insulin can precipitate CHF → avoid such combination.
- These drugs prevent type 2 DM in prediabetics.

574. Metformin is used in treatment & control of ?

a) Diabetes

b) PCOD

c) Pregnancy induced hypertension

d) Both a and b

Correct Answer - D

Ans. is 'd'.i.e., Both a and b

Biguanides acts by :

- Suppress hepatic gluconeogenesis and glucose output from liver major action.
- Enhance insulin mediated glucose disposal in muscle and fat (Increased peripheral utilization of glucose) by enhancing GLUT-1 transport from intracellular site to plasma membrane.
- Retard intestinal absorption of glucose.
- Promote peripheral glucose utilization by enhancing anaerobic glycolysis.

Also know

- Beside DM, *metformin* is also useful in *polycystic ovarian disease*.
- Metformin is the only oral hypoglycemic that reduces macrovascular events in type 2 DM.
- Metformin is one of only two oral antidiabetics in the WHO model list of essential medicines (the other being glibenclamide).

575. Drug used in post prandial sugar control is?

a) Alfa glucosidase

b) Biguinides

c) Sulfonylurea

d) Repaglinide

Correct Answer - D
Ans. is 'd' i.e., Repaglinide

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576. Mechanism of action of propylthiouracil ?

a) Prevents synthesis of thyroglobulin

b) Prevents iodine trapping

c) Prevents release of T_4 & T_3

d) Inhibits coupling

Correct Answer - D

Ans. is 'd' i.e., Inhibits coupling

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577. Orally active hormone is ?

a) TSH

b) Thyroxine

c) GH

d) Prolacin

Correct Answer - B
Ans. is 'b' i.e., Thyroxine

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578. Which of the following drugs used to treat type-II diabetes mellitus causes weight loss

a) Metformin

b) Glimepiride

c) Repaglinide

d) Gliclazide

Correct Answer - A

Ans. is 'a' i.e., Metformin

- Effect of antidiabetic drugs on weight
 1. Increased : Sulfonylureas, insulin, pioglitazone
 2. Decreased : Metformin, GLP-1 antagonists, pramlinitide
 3. No effect: DPP-4 inhibitors

579. Which of the antithyroid drug inhibit iodine trapping?

a) Radioactive iodine

b) Iodides

c) Methimazole

d) Thiocyanates

Correct Answer - D

Ans. is 'd' i.e., Thiocyanates

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580. Short acting glucocorticoid is ?

a) Fludrocortisones

b) Dexamethasone

c) Hydrocortisone

d) Aldostrone

Correct Answer - C

Ans. is 'c' i.e., Hydrocortisone

- **Short-acting:**
 - **Cortisol**
 - **8-12 hours**
- **Intermediate-acting:**
 - Prednisolone
 - 18-36 hours
- **Long-acting:**
 - 36-54 hours

581. Longest acting glucocorticoids is ?

a) Prednisone

b) Prednisolone

c) Cortisone

d) Dexamethasone

Correct Answer - D

Ans. is 'd' i.e., Dexamethasone

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582. The most potent topical corticosteroid is

a) Betamethasone valerate

b) Triamcinolone acetonide

c) Hydrocortisone acetate

d) Clobetasol propionate

Correct Answer - D

Ans. is 'd' i.e., Clobetasol propionate

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583. Which of the following reduces the efficacy of oral contraceptives ?

a) Erythromycin

b) Griseofulvin

c) Cimetidine

d) Disulfiram

Correct Answer - B

Ans. is 'b' i.e., Griseofulvin

- Contraceptive failure may occur if the following drugs are given concurrently :

(a) Enzyme inducer Enhances the metabolism of estrogen & progesterone.

Phenytoin 3. Carbamazepine 5. Primidone

2. Phenobarbitone 4. Rifampicin 6. Griseofulvin

(b) Suppression of intestinal microflora enterohepatic circulation.

1. Tetracyclines 2. Ampicillin

584. Third generation IUCD ?

a) Mirena

b) Nova-T

c) Lippe's loop

d) CuT-200

Correct Answer - A
Ans. is 'a' i.e., Mirena

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585. The best drug for control of esophageal bleeding is?

a) Vasopressin

b) Octreotide

c) GnRH

d) Propranolol

Correct Answer - A

Ans. is 'a' i.e., Vasopressin

- Terlipressin (analogue of vasopressin) is considered the vasoactive agent of choice for acute variceal bleeding.
- Other drugs used are somatostatin and its analog octreotide.

586. Drug of choice for bleeding oesophageal varices is?

a) Ethanolamine oleate

b) Octreotide

c) Propanolol

d) Phytonadione

Correct Answer - B

Ans. is 'b' i.e., Octreotide

- Among the given options, only octeride is used (otherwise vasopressine analogue terlipressine is the DOC).
- Has been explained in previous sessions.

587. Which among the following is an absolute contraindication of Hormone replacement therapy ?

a) Endometriosis

b) Osteoarthritis

c) Heart disease

d) Breast carcinoma

Correct Answer - D

Absolute contraindications of hormone replacement therapy (HRT):
Undiagnosed vaginal bleeding Estrogen dependent cancer in the body Severe liver disease Pregnancy Venous thrombosis Well-differentiated and early endometrial cancer (once treatment for the malignancy is complete, is no longer an absolute contraindication.)

588. Drug of choice for pheochromocytoma ?

a) Propranolol

b) Phenoxybenzamine

c) Prazosin

d) Nitroprusside

Correct Answer - B

Ans. is 'b' i.e., Phenoxybenzamine

Pharmacological treatment of pheochromocytoma

- Preoperatively or when tumour cannot be removed, blood pressure control is achieved by α -adrenoreceptor blockade which reverses peripheral vasoconstriction → Phenoxybenzamine is the DOC
- For hypertensive crises or intraoperative control of BP, phentolamine is the DOC. Prazosin is an alternative. Nitroprusside can also be used → Harrison 17th/e p. 1561.
- In adrenaline secreting tumors, if tachycardia persists, β -blocker can be added after starting α -blockers.
- ACE inhibitor or calcium channel blockers can be used when blood pressure is difficult to control with phenoxybenzamine alone.
- Metyrosine has been used with some success to block catecholamine synthesis in malignant pheochromocytoma.
- Metaiodobenzylguanidine (MIBG) is actively taken up by adrenergic tissue → ^{123}I -MIBG can be used for selective therapeutic irradiation of functioning metastasis.

589. The best agent for increasing HDL cholesterol is ?

a) Statin

b) Nicotinic acid

c) Gugulipids

d) Fibrates

Correct Answer - B

Ans. is 'b' i.e., Nicotinic acid

Nicotinic acid (Niacin)

- There are three main type of lipases related to metabolism of lipoproteins ?
- 1. Lipoprotein lipase → Present in blood vessels and causes hydrolysis of triglyceride content of VLDL and chylomicrons.
- 2. Hepatic lipase → Converts IDL to LDL by hydrolysing the triglyceride content of IDL.
- 3. Hormone sensitive lipase → Present intracellularly in peripheral tissue and causes intracellular lipolysis by hydrolysing triglycerides.
- Niacin (Nicotinic acid) inhibits intracellular lipolysis by inhibiting hormone sensitive lipase → intracellular FFA to liver → triglyceride synthesis.
- Niacin also increases the activity of lipoprotein lipase → T hydrolysis of VLDL triglyceride.
- Nicotinic acid also reduces the production of VLDL in liver by inhibiting TG-synthesis → indirectly the VLDL degradation products IDL and LDL are also reduced.
- Nicotinic acid is the most effective drug to raise HDL-CH.
- Increased HDL is due to interference of direct pathway of HDL cholesterol to liver which involves apo-A, → Niacin decreases apo-A,

- mediated hepatic clearance.
- Nicotinic acid is used in type I, III, IV & V hyperlipoproteinemias.

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590. All of the following are adverse effects of nicotinic acid except ?

a) Vasodilation

b) Pancreatitis

c) Liver dysfunction

d) Hyperpigmentation

Correct Answer - B

Ans. is 'b' i.e., Pancreatitis

Adverse effects of nicotine

- Adverse effects → 1) Marked flushing, itching (pruritis) and heat due to cutaneous vasodilatation, 2) Dyspepsia, vomiting and diarrhoea, 3) Liver dysfunction, 4) Hyperpigmentation and dryness of skin, 5) Hyperglycemia and hyperuricemia.
- The cutaneous effects of nicotinic acid include flushing and pruritis of face and upper trunk, skin rashes and acanthosis nigricans. These symptoms are due to vasodilatory action of niacin through release of PGs and can be prevented by pretreatment with aspirin.

591. Mechanism of Action of clofibrate ?

- a) They increase lipoprotein lipase activity through PPAR alpha and cause increased lipolysis of triglycerides
- b) Inhibits lipolysis in adipose tissue
- c) Inhibits HMG CoA reductase
- d) Bind bile acids and bile salts in small intestine

Correct Answer - A

Ans. is 'a' i.e., They increase lipoprotein lipase activity through PPAR alpha and cause increased lipolysis of triglycerides

- Fibrates act by transcriptionally upregulating LPL, apo A-I and apo A-1 I, and down regulate apo CIII, an inhibitor of lipolysis by activating a nuclear receptor, PPAR alpha (peroxisome proliferator activated receptor alpha). o Major effect of the fibrates is to ?
 1. Increased oxidation of fatty acids in liver and striated muscle
 2. Increased lipolysis of lipoprotein triglyceride via LPL.
 3. Reduce TG (contained in VLDL) reduced VLDL secretion by liver.
 4. Increase HDL

592. Drug that binds bile acids in the intestine and prevents their return to liver via the enterohepatic circulation is?

a) Niacin

b) Fenofibrate

c) Cholestyramine

d) Gugulipid

Correct Answer - C
Ans. is 'c' i.e., Cholestyramine

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593. Antitussive opioid is ?

a) Ethylmorphine

b) Pethidine

c) Methadone

d) Buprenorphine

Correct Answer - A

Ans. is 'a' i.e., Ethylmorphine

Antitussives (cough center suppressants)

- Opioids : Codeine, ethylmorphine, pholcodeine.
- Non-opioids : Noscapine, dextro methorphan, chlophedianol.
- Antihistaminics : Chlorpheniramine, diphenhydromine, promethazine.
- Peripherally active : Prenoxdiazine.

594. Drug of choice for familial hypercholesterolemia ?

a) Gemfibrogil

b) Nicotinic acid

c) Lovastatin

d) Ceholestgramin

Correct Answer - C

Ans. is 'c' i.e., Lovastatin

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595. Not true about hypolipidemic drugs

- a) Cholesterol reducing drugs are contraindicated in child less than 8 years
- b) Gemfibrozil causes myopathy
- c) Gemfibrozil can increase myopathy caused by statins
- d) Lovastatin can cause hepatic dysfunction

Correct Answer - A

Ans. is 'a' i.e., Cholesterol-reducing drugs are contraindicated in child less than 8 years

- Contraindication for uses of statins (cholesterol-reducing drugs) are -
 - Pregnancy
 - Breastfeeding
 - Active liver disease
- Gemfibrozil can cause myopathy and it can aggravate myopathy caused by statins.
- Lovastatin can cause hepatic dysfunction.

596. Clinical effect of vitamin D is reduced by ?

- a) Simultaneous ingestion of phytates
- b) Simultaneous ingestion of lactose
- c) Acidic environment
- d) None

Correct Answer - A

Ans. is 'a' i.e., Simultaneous ingestion of phytates

- The main clinical effect of vitamin D is to enhance intestinal absorption of calcium.
- With an average intake of 1000 mg of calcium its net intestinal absorption is only 150-250 mg/day.
- Calcium is absorbed mainly in the duodenum and jejunum (proximal intestine) by an active transport mechanism regulated by $1, 25 (\text{OH})_2 \text{D}_3$ (calcitriol).
- Parathormone indirectly promotes absorption of calcium by increasing the renal synthesis of $1, 25 (\text{OH})_2 \text{D}_3$.
- Dietary lactose, proteins and an acidic environment promote calcium absorption.
- On the other hand, phytates, phosphates, oxalates, tetracycline and an alkaline environment impair calcium absorption.

597. Parenteral direct thrombin inhibitor ?

a) Ximelagatran

b) Dabigatran

c) Argatroban

d) Heparin

Correct Answer - C

Ans. is 'c' i.e., Argatroban

Parental direct thrombin inhibitors

- Argatroban Bivalirudin
- Hirudin Lepirudino Melagatran
- Desirudin

Oral Direct thrombin inhibitors

- Dabigatran (recent)
- Ximelagatran (withdrawn)

598. Which prevents plasminogen activators?

a) Streptokinase

b) Aminocaproic acid

c) Reteplase

d) Clopidogrel

Correct Answer - B

Ans. is 'b' i.e., Aminocaproic acid

o Epsilon amino caproic acid (EACA) competitively inhibits plasminogen activation.

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599. Mechanism of action of transexaminic acid is

- a) Decrease vascular permeability
- b) Smooth muscle contraction
- c) Activates Plasmin formation
- d) Prevents fibrinolysis

Correct Answer - D

Ans. is 'd' i.e., Prevents fibrinolysis

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600. Gp2b3A inhibitors are all except ?

a) Abciximab

b) Eptifibatide

c) Tirofiban

d) Prasugrel

Correct Answer - D

Ans. is 'd' i.e., Prasugrel

Glycoproteins lib / 111a inhibitors

- The platelet glycoprotein mediates platelet aggregation via binding of adhesive proteins such as fibrinogen and Von Willebrand factor.
- GP IIb / Ila inhibitors, inhibit platelet aggregation by blocking GPIIb / Ma.
- They are more complete inhibitors than either aspirin or clopidogrel / ticlopidine because they inhibit final pathway in platelet aggregation (whether it is mediated by ADP or TXA₂), while aspirin blocks only TXA₂ pathway and clopidogrel blocks only ADP pathway.
- Drugs are ?
 1. Abciximab → A humanized monoclonal antibody against GP IIb / 111a.
 2. Eptifibatide
 3. Tirofiban → Competitive inhibitors of GP I1b/IIla
 4. Lamifiban
- In addition to inhibiting Gp lib / Ila receptor, abciximab also inhibits α_vP₃ receptor (which binds vitronectin) and α₁₃₂ (a leukocyte integrin). This action is responsible for anti-inflammatory and antiproliferative properties of abciximab.

601. Warfarin acts by

- a) Inhibition of Vitamin K epoxide reductase
- b) Inhibition of gamma glutamyl carboxylase
- c) Activation of Vitamin K epoxide reductase
- d) Activation of gamma glutamyl carboxylase

Correct Answer - A

Ans. is 'a' i.e., Inhibition of Vitamin K epoxide reductase

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602. Which of the following is given orally

a) Argatroban

b) Alteplase

c) Rivaroxaban

d) Fondaparinux

Correct Answer - C

Ans. is 'c' i.e., Rivaroxaban

- Rivaroxaban - it is an orally active direct inhibitor of activated factor Xa which has become available for prophylaxis and treatment of DVT.
- Alteplase - given by i.v. infusion due to short half life of 4 - 8 min and often requires heparin coadministration.
- Argatroban - direct thrombin inhibitor; given by i.v. infusion; used in place of lepirudin for short term indications in patients with heparin induced thrombocytopenia.
- Fondaparinux - 100% bioavailability with subcutaneous injection

603. Hydroxyethyl starch is a ?

a) Vasodilator

b) Inotrope

c) Plasma expander

d) Diuretic

Correct Answer - C

Ans. is 'c' i.e., Plasma expander

Plasma expanders

- These are high molecular weight substances which exerts colloidal osmotic (oncotic) pressure, and when infused i.v. retain fluid in the vascular compartment.
- Human plasma or reconstituted human albumin are the best, However, the former carries the risk of transmitting serum hepatitis, AIDS, and latter is expensive. Therefore synthetic colloids are more often used.
- Desirable properties of plasma expander are :
 1. Should exert oncotic pressure comparable to plasma.
 2. Should remain in circulation and not leak out in tissues, or be too rapidly disposed.
 3. Should be pharmacodynamically inert.

604. Antibiotic sensitivity testing can be done using all except

a) E test

b) Kirby-Bauer method

c) Culture agar method

d) Broth dilution method

Correct Answer - C

Ans. is 'c' i.e., Culture agar method

Tests used for antimicrobial sensitivity are :

1. Disc susceptibility test (most commonly used)
2. Broth dilution susceptibility test
3. Kirby-Bauer disc diffusion method
4. E-test (Epsilonieter test)

605. Advantages of amoxicillin over ampicillin are all except ?

- a) Better bioavailability & faster action
- b) Spectrum includes *H. influenzae* & *Shigella*
- c) Incidence of diarrhea is lower
- d) Food does not interfere with its absorption

Correct Answer - B

Ans. is 'b' i.e., Spectrum includes *H. influenzae* & *Shigella*

- Amoxicillin is a close congener of ampicillin; similar to it in all respects except :
 - Oral absorption is better; food does not interfere with absorption; higher and more sustained blood levels are produced.
 - Incidence of diarrhea is lower.
 - It is less active against *Shigella* and *H. influenzae*.
- It is now preferred over ampicillin for bronchitis, urinary infections, SAGE and gonorrhoea.

606. All of the following are therapeutic uses of penicillin G, except

a) Bacterial meningitis

b) Rickettsial infection

c) Syphilis

d) Anthrax

Correct Answer - B

Ans. is 'b' i.e., Rickettsial infection

Penicillin G is the DOC for

1. Meningococcal meningitis	7. Leptospira
2. Bacillus anthracis (anthrax)	8. Actinomyces israelii (Actinomycosis)
3. Clostridium perfringens (gas gangrene)	9. Borrelia burgdorferi (Lyme disease)
4. Clostridium tetani (tetanus)	10. Enterococci
5. Corynebacterium diphtheriae	11. Streptococci
6. Treponema pallidum (syphilis)	12. Susceptible pneumococci

607. Mechanism of action of aminoglycosides is ?

a) Inhibition of protein synthesis

b) Image to cell membrane

c) Coagulation of proteins

d) Inhibition of cell wall synthesis

Correct Answer - A

Ans. is 'a' i.e., Inhibition of protein synthesis

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608. Not true about clofazamine ?

- a) Used in DLE
- b) Causes ichthyosis and hyperpigmentation
- c) Interferes DNA synthesis
- d) Used in lepra reaction

Correct Answer - A

Ans. is 'a' i.e., Used in DLE

• Clofazimine interferes with template function of DNA, is used in lepra reaction and can cause ichthyosis and hyperpigmentation.

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609. First generation cephalosporins are active against?

a) Gram negative bacteria

b) Gram positive bacteria

c) Anaerobes

d) Dermatophytes

Correct Answer - B

Ans. is 'b' i.e., Gram positive bacteria

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610. Drug used in hepatitis B infection is -

a) Entecavir

b) Astacavir

c) Zanamivir

d) Abacavir

Correct Answer - A

Ans. is 'a' i.e., Entecavir

o Entecavir is the DOC for chronic hepatitis B infection.

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611. Raltegravir can cause ?

a) Hypokalemia

b) Hypocalcemia

c) Hyperkalemia

d) Hypercalcemia

Correct Answer - C

Ans. is 'c' i.e., Hyperkalemia

- 1. Myopathy (muscle pain, tiredness) and rhabdomyolysis.
- 2. Skin reactions.
- 3. Allergic reactions.
- 4. Liver problems.
- 5. Immune reconstitution inflammatory syndrome (IRIS).
- 6. Nonspecific : nausea, vomiting, diarrhea, headache.
- No textbook has mentioned any electrolyte abnormality as a side effect of raltegravir.
- So, I had to find the answer of this question indirectly.
- Raltegravir can cause rhabdomyolysis, in which there is hyperkalemia.

612. Mode of excretion of cyclophosphamide is ?

a) Lung

b) Liver

c) Kidney

d) Skin

Correct Answer - C

Ans. is 'c' i.e., Kidney

- Cyclophosphamide is primarily metabolized (80%) and metabolites are excreted in urine.
- 10 to 20% is excreted unchanged in urine and 4% is excreted in bile.

613. Not true about aztreonam ?

a) β -lactam

b) Monobactam

c) Active against pseudomonas

d) Shows cross reactivity with other penicillins

Correct Answer - D

Ans. is 'd' i.e., Shows cross reactivity with other penicillins

Aztreonam

- It belongs to monobactams group of β -lactam antibiotics.
- It is active against gram negative organisms including pseudomonas, but has no activity against gram positive organisms or anaerobes β -lactam antibiotic with aminoglycosides spectrum.
- It is the only β -lactam antibiotic that lack cross-reactivity with other β -lactam antibiotics, permitting its used in patients allergic to penicillins or cephalosporins.

614. Drug useful in breast cancer is ?

a) Tamoxifen

b) Cyproterone

c) Testosterone

d) Chlorambucil

Correct Answer - A

Ans. is 'a' i.e., Tamoxifen

Pharmacotherapy of breast cancer

- Many breast carcinomas possess estrogen receptors. Estrogen promotes their growth.
- Drugs which decrease the action of *estrogen* on breast CA by one or other mechanisms, can be used in breast CA. Drugs used in Breast cancer
- Selective estrogen receptor modulators (SERMs) - *Tamoxifen*, *Toremifene*.
- Selective estrogen receptor down regulators (SERDs) - *Fulvestrant*
- Aromatase inhibitors - *Letrozole*, *anastrozole*, *exemestone*
- LHRH (GnRh) analogues
- Aminoglutethimide
- High doses progesterones - *Megestrol acetate*.

615. All antiretroviral drugs produce peripheral neuropathy except ?

a) Stavudine

b) Zalcitabine

c) Didanosine

d) Indinavir

Correct Answer - D

Ans. is 'd' i.e., Indinavir

Characteristic side effects of important antiretroviral drugs

- Lamivudin - Nausea, headache, fatigue.
- Stavudine - *Peripheral neuropathy*, lipodystrophy, hyperlipidemia, pancreatitis, rapidly progressive ascending neuromuscular weakness.
- Didanosine - *Peripheral neuropathy*, pancreatitis, diarrhea, nausea, hyperuricemia.
- Zalcitabine - *Peripheral neuropathy*, oral ulceration, pancreatitis.
- Zidovudin - Macrocytic anemia, neutropenia, nausea, headache, insomnia, asthenia.
- Tenofovir - Asthenia, headache, diarrhea, nausea, vomiting, flatulence, renal insufficiency.
- Efavirenz - CNS effects, rash, T liver enzymes.
- Nevirapine - Rash, hepatitis, nausea, headache.
- Indinavir - *Nephrolithiasis*, nausea, indirect hyperbilirubinemia, headache, blurred vision, asthenia.

616. Which of the following is a topical sulfonamide ?

a) Sulfadoxine

b) Mafenide

c) Sulfamethopyrazine

d) None

Correct Answer - B

Ans. is 'b' i.e., Mafenide

Classification of sulfonamides

- Short-acting - Sulfadiazine, Sulfisoxazole, Sulfamethizole, Sulfacycline.
- Intermediate-acting - Sulfamethoxazole.
- Long-acting - Sulfadoxine, Sulfamethopyrazine.
- Topical Sulfonamides - Sulfacetamide sodium, Mafenide, silver sulfadiazine.
- Sulfonamide for RA and ulcerative colitis - Sulfasalazine.

617. Tetracycline injection causes palsy of which nerve?

a) Ulnar

b) Median

c) Radial

d) Superficial Radial Nerve injury

Correct Answer - C
Ans. is 'c' i.e., Radial

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618. Erlotinib is used in ?

a) Colon cancer

b) Pancreatic cancer

c) Gall bladder cancer

d) GIST

Correct Answer - B

Ans. is 'b' i.e., Pancreatic cancer

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619. All are used for carcinoma head & neck except ?

a) 5FU

b) Busulfan

c) Cisplatin

d) Methotrexate

Correct Answer - B
Ans. is 'b' i.e., Busulfan

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620. Which anticancer drug prevents spindle formation?

a) Busulfan

b) Vinca alkaloids

c) 5 - FU

d) Methotrexate

Correct Answer - B

Ans. is 'b' i.e., Vinca alkaloids

- *Taxanes (Paclitaxel and Docetaxel)* enhances polymerization of tubulin (a mechanism opposite to that of vincaalkaloids) → the microtubules are stabilized and their depolymerization is prevented.
- *Vinca alkaloids* (vincristine, vinblastine) prevent polymerization and assembly of microtubules.

Mitotic inhibitors

Enhances polymerization

Prevent polymerization

Taxanes

Vinca alkaloids

621. Which one of the following statements is false regarding vincristine -

- a) It is an alkaloid
- b) Its use is associated with neurotoxicity
- c) It does not cause alopecia
- d) It is a useful drug for induction of remission in acute lymphoblastic leukaemia

Correct Answer - C

Ans. is 'c' i.e., It does not cause alopecia

- * Vincristine belongs to the plant alkaloid group of anticancer.
- * Useful for inducing remission in childhood ALL (*not useful in maintenance therapy*)
- * It can also be used for pediatric solid tumors (Wilm's tumor, neuroblastoma, rhabdomyosarcoma) and lymphomas.
- * Prominent adverse effects?
 - * *Peripheral neuropathy*
 - Alopecia*
 - SIADH*

622. Ranibizomab is monoclonal antibody against ?

a) IL-6

b) CD-20

c) VEGF

d) EGFR

Correct Answer - C
Ans. is 'c' i.e., VEGF

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623. Which of the following is used for prostatic carcinoma?

a) Danazole

b) Clomiphene

c) Finasteride

d) None

Correct Answer - C
Ans. is 'c' i.e., Finasteride

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624. Drug contraindicated in G6PD deficiency?

a) Chloroquine

b) Primaquine

c) Quinine

d) Halofantrine

Correct Answer - A:B:C

Ans. is 'b > c > a' i.e., Primaquine > Quinine > Chloroquine

- Among antimalarial drugs, primaquine, quinine and occasionally chloroquine can cause hemolytic anemia in G6PD deficiency.
- But, primaquine has the highest potential to cause hemolytic anemia in patients with G6PD deficiency and, the patients with G6PD deficiency are highly sensitive to primaquine.
- The hemolytic potential in G6PD deficiency patients -

625. Pyridoxine is used in treatment of ?

- a) Galactosemia
- b) Phenylketonuria
- c) Propionic acidemia
- d) Homocystinuria

Correct Answer - D

Ans. is 'd' i.e., Homocystinuria

Inborn error of metabolism and Treatment

Alkaptonuria	Vitamin C, Folic acid
Homocystinuria	Pyridoxine + Folic acid
Cystinuria	Alkalization of urine + d-Penicillamine, Captopril
Hartnup disease	Nicotinamide
Multiple carboxylase efficiency	Biotin
Methyl malonic academia	Vitamin B 12
Hyperoxaluria	Pyridoxine
Tyrosinemia	NTBC, Liver Transplantation

626. Peripheral neuropathy is/are caused by:

a) Vincristine

b) Sulfonamide

c) Amiodarone

d) Paclitaxel

e) None

Correct Answer - A:C:D

Ans. (A) Vincristine (C) Amiodarone (D) Paclitaxel

[Ref: Harrison 19th/2686-88, 18th/3463-66; KDT 7th/706]

- Sulfonamide not mentioned in list of drugs causing neuropathies

627. Peripheral neuropathy as a side effect is caused by which of the following anti cancer drugs ?

a) Vincristine

b) Cyclophosphamide

c) Etoposide

d) Irinotecan

Correct Answer - A

Ans. is 'a' i.e., Vincristine

Vincristine (Oncovin)

- Alkaloid derived from *Vinca rosae*.
- Vincristine belongs to the plant alkaloid group of anticancer.
- Rapidly acting anticancer
- This class of drugs are also known as spindle poison.
- These drugs bind to microtubular protein (tubulin)
- The drug-tubulin complex then attaches itself to microtubules and causes depolymerization of microtubules.
- Depolymerization of microtubule causes
 - 1. Mitotic arrest at metaphase
 - 2. Dissolution of mitotic spindle
 - 3. Interference with chromosome segregation
- Useful for inducing remission in childhood ALL (not useful in maintenance therapy)
- It can also be used for pediatric solid tumors (Wilm's tumor, neuroblastoma, rhabdomyosarcoma) and lymphomas.
- Prominent adverse effects?
Peripheral neuropathy Alopecia SIADH

- Vincristine is a marrow sparing drug but some times it may cause myelosuppression which is very less than vinblastin.
- Indications of vincristine?
Hodgkins disease Wilms's tumour Carcinoma lung
Non hodgkin:s disease Ewing's sarcoma Myeloma
- Vinblastine and vinorelbine are other vinca alkaloids.
- o Vinblastine's most important clinical use is the curative therapy of metastatic testicular tumor.
- o Vinblastine can cause bone marrow suppression (in contrast with vincristin), alopecia, and nausea & vomiting. o As they arrest mitosis, all vinca alkaloids act in M phase.

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628. Gynaecomastia is caused by which drug ?

a) Spironolactone

b) Rifampicin

c) Thiazide

d) Propanolol

Correct Answer - A

Ans. is 'a' i.e., Spironolactone

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629. Alcohol mainly increases -

a) TG

b) LDL

c) VLDL

d) HDL

Correct Answer - D

Ans. is 'd' i.e., **HDL**

- Regular intake of small to moderate amounts of alcohol (1-2 drinks) has been found to raise HDL cholesterol levels and decrease LDL oxidation. This may be responsible for 15 - 35% lower incidence of coronary artery disease in such individuals. Risk reduction is greatest in high risk subjects and the protection is lost if ≥ 3 drinks are consumed daily.

630. Not a hepatotoxic drug ?

a) Chlorpropamide

b) Allopurinol

c) Streptomycin

d) Halothane

Correct Answer - C
Ans. is 'c' i.e., Streptomycin

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631. Botulinum toxin acts on

a) Synapse

b) Smooth muscle of intestine

c) Central nervous system

d) Sensory nerves

Correct Answer - A

Ans. is 'a' i.e., Synapse

- Botulinum toxin affects Neuromuscular junction.
- Postganglionic parasympathetic nerve endings.
- Peripheral ganglia.
- Central nervous system is not involved and there is no sensory involvement.
- Botulinum toxin acts by inhibiting the calcium mediated exocytosis of ACh from the vesicles in the synapse.

632. Botulinum toxin mimics -

a) Cholinergics

b) Anticholinergics

c) Adrenergics

d) Antiadrenergic

Correct Answer - B

Ans. is 'b' i.e., Anticholinergics

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633. Botulinum toxin type B is used in which disease ?

a) Glabellar lines

b) Strabismus

c) Cervical dystonia

d) Blepharospasm

Correct Answer - C

Ans. is 'c' i.e., Cervical dystonia

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634. Which of the following is associated with hemorrhagic stroke ?

a) Phenylpropanolamine

b) Terfenadine

c) Quinidine

d) Fenfluramine

Correct Answer - A

Ans. is 'a' i.e., Phenylpropanolamine

Many reports associating phenylpropanolamine use for weight loss with haemorrhagic stroke among women, appeared in U.S.A.

635. Which of the following drug can casue thyroid dysfunction?

a) Amiodarone

b) Ampicillin

c) Ibutilide

d) Acyclovir

Correct Answer - A

Ans. is 'a' i.e., Amiodarone

Drugs causing hypothyroidism

Lithium Sulfonamide Phenobarbitone Phenytoin
Amiodarone Paraminosalicylic acid (PAS) Rifampicin
Carbamazepine

636. All drugs have recently been withdrawn from India except ?

a) Gatifloxacin

b) Rofecoxib

c) Cotrimoxazole

d) Phenformin

Correct Answer - C

Ans. is 'c' i.e., Cotrimoxazole

- Drugs which have been withdrawn from India are (i) Rimonabant; (ii) gatifloxacin; (iii) sibutramine; (iv) rofecoxib & valdecoxib; (v) astemizole & terfenadine; (vi) fenfluramine & dexfenfluramine; (vii) phenformin; (viii) tegaserod; and (ix) rosiglitazone.

637.

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Hurt is defined under section ?

a) 320 IPC

b) 321 IPC

c) 319 IPC

d) 323 IPC

Correct Answer - C

Ans. is 'c' i.e., 319 IPC

- 319 IPC : Defines hurt.
- 320 IPC : Defines grievous hurt.
- 321 IPC : Voluntarily causing hurt.
- 322 IPC : Voluntarily causing grievous hurt.
- 323 IPC : Punishment for voluntarily causing hurt (no provocation, no dangerous weapon) (1 years imprisonment).
- 324 IPC : Punishment for voluntarily causing hurt by dangerous weapon (3 years imprisonment $\pm$ fine).
- 325 IPC : Punishment for voluntarily causing grievous hurt (no provocation, no dangerous weapon) (7 years imprisonment $\pm$ fine).

638. All sections of IPC are related to grievous hurt, except

a) Sec. 320

b) Sec. 331

c) Sec. 326

d) Sec. 319

Correct Answer - D

Ans. d. Sec. 319

- 319. Hurt.—Whoever causes bodily pain, disease or infirmity to any person is said to cause hurt.
- It is of two types: i. Simple and ii. Grievous
- Sec-319 --> Defines Hurt.—Whoever causes bodily pain, disease or infirmity to any person is said to cause hurt.
- Sec- 320--> Defines the grievous hurt and comprises of 8 clauses
- Sec-326 --> Voluntarily causing grievous hurt by dangerous weapons/means, fine/punishment up to 10 years.
- Sec 331 --> Voluntarily causing grievous hurt to extort confession, or to compel restoration of the property. shall be punished with imprisonment of either description for a term which may extend to ten years, and shall also be liable to fine.

639. IPC 197 is related to: *NEET 14*

- a) Causing disappearance of evidence
- b) Issuing false certificate by doctor
- c) Giving false evidence
- d) b and c both

Correct Answer - B

Ans. B.) Issuing false certificate by doctor

I.P.C 197, Issuing or signing false certificate.

IPCs related to Medical Practice:

IPC section	Definition
52	Nothing is said to be done in good faith which is done without due care and attention
74	Nonattendance in obedience to summons from court
175	Omission to produce document to public servant
176	Omission to give notice or information to public servant
177	Furnishing false information
179	Refusing to answer public servant authorized to question
191	Giving false evidence (Perjury)
197	Issuing or signing false certificate
201	Causing disappearance of evidence of offence or giving false information to screen offenders
204	Destruction of document to prevent its production as evidence
269	Negligent act likely to spread infection of disease dangerous to life
270	Malignant act likely to spread infection of disease dangerous to life
160	Police officer has the power to summon any witness (doctor) to police station for recording a statement
87 - 93	Legal protection to medical doctors

640. Miscarriage is punishable under which IPC:

AIIMS 13; NEET 14

a) Sec 320 IPC

b) Sec 311 IPC

c) Sec 312 IPC

d) Sec 314 IPC

Correct Answer - C
Ans. Sec 312 IPC

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641. Sections 312 to 315 deal with ?

- a) Kidnapping & abduction
- b) Attention & abetment to suicide
- c) Causing grievous hurt
- d) Criminal abortion

Correct Answer - D

Ans. is D. i.e., Criminal abortion

- 312, 313, 314 and 315 IPC: For causing voluntary miscarriage (criminal abortion).
- 312 IPC: Causing miscarriage with consent (3 years of imprisonment ± fine).
- 313 IPC: Causing miscarriage without consent of lady (10 years of imprisonment which can extend up to life ± fine).
- 314 IPC: Death of patient caused by miscarriage (10 years of imprisonment ± fine).
- 315 IPC: Death of child during miscarriage (10 years imprisonment ± fine).

642. Miscarriage due to negligence of doctor is seen under which IPC ?

a) Sec 310 IPC

b) Sec 311 IPC

c) Sec 312 IPC

d) Sec 314 IPC

Correct Answer - C

Ans. is 'c' i.e., Sec 312 IPC

Sec 312 IPC refers to "causing miscarriage" of a woman pregnant with a child, punishable up to 3 years, but if she is "quick" with her child the punishment may extend to 7 years.

643. Under which section, police can arrest a person and ask medical officer to examine him without victims consent ?

a) Sec 330 IPC

b) Sec 53 IPC

c) Sec 190 IPC

d) Sec 304-A IPC

Correct Answer - B

Ans. is 'b' i.e., Sec 53 IPC

- 53 1PC : An accused can be examined by a medical practitioner at request of police, even without his consent or by force.
- 304-A IPC: Causing death by negligence(criminal negligence) which also includes medical negligence (Punishable up 2 years or fine or both).
- 330, 331, 339, 341 IPCs : Torture.
- 190 IPC : Threat of refraining a person from applying protection to a public servant.

644. According to which section, a person can be punished for murder with imprisonment for 10 years

a) Sec 301 IPC

b) Sec 300 IPC

c) Sec 302 IPC

d) Sec 304 IPC

Correct Answer - C

Ans. is 'c' i.e., Sec 302

- 302 IPC: Punishment for murder (death or life imprisonment).
- 301 IPC : Culpable homicide by causing death of person other than person whose death was intended.
- 300 IPC : Murder (defining murder).
- 303 IPC : Punishment of murder of life convict (death).
- 304 IPC : Punishment of culpable homicide, not amounting to murder (10 years imprisonment f fine).
- 305 IPC : Abetment of suicide of child or insane person.
- 306 IPC : Abetment of suicide.
- 307 IPC : Attempt to murder (10 years imprisonment f fine).
- 308 IPC : Attempt to commit culpable homicide (3-7 years imprisonment $\pm$ fine).
- 309 IPC : Attempt to commit suicide (1 years imprisonment $\pm$ fine).

645.

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According to section 82 IPC a child's act is not considered as a crime if he is -

a) < 4 years

b) < 7 years

c) < 12 years

d) < 18 years

Correct Answer - B

Ans. is 'b' i.e., < 7 years

82 A child under the age of seven is incapable of committing an offence. This is so because action alone does not amount to guilt unless it is accompanied by a guilty mind. And, a child of that tender age cannot have a guilty mind or criminal intention with which the act is done. This presumption, however, is only confined to offenses under the IPC but not to other Acts, e.g., the Railway Act.

646. Penalty awarded according to dowry prohibition act?

a) 15000 Rs and 5 years

b) 30000 Rs and 7 years

c) Life imprisonment

d) Imprisonment for 10 years

Correct Answer - A

Ans. is 'a' i.e., 15000 Rs and 5 years

- According to Dowry Prohibition act (1961), if any person gives or takes or abets the giving or taking dowry is punishable with imprisonment for a term which shall not be less than 5 years and with a fine which shall not be less than 15000 rupees or the amount of the value of such dowry, whichever is more.
- Note - According to section 304 B IPC punishment for dowry death is imprisonment for atleast 10 years, which may be extended to life imprisonment.

647. Quantum of punishment in dowry death is ?

a) 7years

b) 5 years

c) Death

d) 10 years

Correct Answer - D

Ans. is 'd' i.e., 10 years

- 304-B IPC: Dowry death : 10 years of imprisonment which can extend to life.
- 498-A IPC : Punishment for cruelty by husband or his relatives.
Dowry death
- In some cases newly married girls are abused, harassed, cruelly treated and tortured by the husband, in-laws and their relatives for or in connection with any demand for dowry. In extreme cases, the woman is killed by burning or some other method. Law in relation to dowry death are :
Low prescribing punishment and definition (section 304 B IPC)
- Husband or (his any) relative will be tried under section 304B, IPC and shall be deemed to have caused her death, if a woman dies due to bodily injury or burns or otherwise in suspicious circumstances within 7 years of marriage and it is shown that soon before her death she was subjected to harassment or cruelty by them, in connection with, any demand for dowry. Such death shall be called dowry death. Punishment includes imprisonment of not less than 10 years, but which may extend to life imprisonment'.
Low prescribing punishment for causing cruelty to a married women (Sec. 498A, IPC)

Husband or (his any) relative will be tried under section 498A, IPC for causing cruelty to a married woman. Cruelty is defined as any willful conduct which drives the woman to commit suicide or grave physical or mental injury to her or harassment of the women with a view to coerce (intimidate) her for dowry. Punishment includes imprisonment which may extend upto 3 years and fine.

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648. Dowry death is under which IPC ?

a) IPC 304 A

b) IPC 304 B

c) IPC 305 A

d) IPC 305 B

Correct Answer - B

Ans. is 'b' i.e., IPC 304 B

304-B IPC : Dowry death : 10 years of imprisonment which can extend to life.

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649. Class I judicial magistrate has power to give punishment of-

a) 5yr, Rs. 3000

b) 3yr, Rs.5000

c) 5yr Rs.5000

d) 3yr, Rs 3000

Correct Answer - B

Ans. is 'b' i.e., 3 yr, Rs. 5000

o Powers of Magistrate (sec 29 CrPC)

Class	Imprisonment	Fine
Chief judicial magistrate	Upto 7 years	Any amount
Class 1 judicial magistrate	Upto 3 years	Rs 5000
Class 2 judicial magistrate	Upto 1 year	Rs 1000

650. Police inquest is done in all, except:
NEET 13, 14

a) Suicidal death

b) Homicidal death

c) Dowry death

d) Death by animals

Correct Answer - C
Ans. Dowry death

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651. Magistrate inquest is done in case of ?

- a) Death by suicide
- b) Death by accident
- c) Death in psychiatry hospital
- d) Death in suspicious circumstances

Correct Answer - C

Ans. is 'c' i.e., Death in psychiatry hospital

- Magistrate's inquest is done under sec 176 CrPC in case of :-
 1. Death in prison, reformatories, Borstal school.
 2. Death in police custody while under police interrogation.
 3. Death due to police firing.
 4. Dowry death; i.e. death of a married female less than 30 years of age or death within 7 years of marriage.
 5. Exhumation.
 6. Death in psychiatry hospital.
 7. Custodial rape.

652. Professional death in medical profession is ?

a) Death of doctor

b) Death sentence ordered by judge

c) Death during police firing

d) Removal of name of doctor from panel of RMP

Correct Answer - D

Ans. is 'd' i.e., Removal of name of doctor from panel of RMP

- MCI maintains medical register (Indian medical register) of medical practitioners. The registrar should keep the register up to date by :?
A.Deleting names of (Erasure of name) : (i) Those dead, (ii) *Those awarded penal erasure (professional death sentence) for professional misconduct*, (iii) Entries made in error or fraud.
B.Adding names of : (1) Fresh graduates, (ii) Whose term of temporary erasure expires.

653. Doctrine of res ipsa loquitur means ?

- a) Common knowledge
- b) Medical maloccurance
- c) Fact speaks for itself
- d) Oral evidence

Correct Answer - C

Ans. is 'c' i.e., Fact speaks for itself

Doctrine of res ipsa loquitur

- It means "the thing or fact speaks for itself".
- In a case of professional *negligence of a physician, the patient need not prove negligence.*
- It is applied when following conditions are fulfilled :
 1. That in the absence of negligence the injury would not have occurred ordinarily.
 2. That the doctor had exclusive control over the injury producing instrument or treatment.
 3. That the patient was not guilty of contributory negligence.

654. Blanket consent is consent taken-

- a) When the patient comes to doctor for treatment
- b) Oral consent
- c) Written consent
- d) Taken at the time of admission to do any surgery

Correct Answer - D

Ans. is' i.e., Taken at the time of admission to do any surgery

- Blanket consent: It refers to consent which is taken usually on a printed form, at the time of admission of the patient, authorizing the doctor to do any surgery under any anaesthesia. Legally, it is no consent, i.e. it is of no value in court. *To be legally valid, the consent is to be obtained for each specific procedure and operation.*
- Implied consent: In this, consent presumed to be there. The very fact that the patient has come to the doctor for treatment, it is presumed that his consent is there for routine physical examination. e.g. inspection, palpation, auscultation and percussion. Implied consent is a *non-written but legally effective form of consent*, which is not expressly asserted.
- Expressed consent: It is stated (oral or written) in clear and explicit language. Oral consent, given in presence of two or more witnesses is as valid as written consent, but there is no record. Written consent is better as there is a record of consent available, in cases of dispute.
- Written informed consent: It is a type of *expressed consent* in written form which is given by the patient after being informed of nature of illness or nature of procedure or operation to be done, its alternatives, its consequences and complications.

655. Schedule-3 of MCI includes-

a) MBBS degree of indian universities

b) DNB degree

c) Diploma of CPS

d) MBBS degree of foreign universities

Correct Answer - C

Ans. is 'c' i.e., Diploma of CPS

Schedules of MCI Act

- MCI was established in 1934 and MCI act was revised in 1956, 1964, 1993, 1999, and 2002. The schedules of MCI includes list of medical degrees recognized by MCI :-
 1. Schedule 1 :- Includes list of recognised degrees awarded by Indian universities(' ') and also DNB awarded by National Board of Examination, New Delhi.
 2. Schedule 2 :- Includes list of recognized medical degrees awarded by foreign universities or ob'.
 3. Schedule 3 :- Includes list of medical qualifications awarded by Indian or foreign boards or societies, but are not included in schedule 1 or 2. It has two parts :?
 - Part I : Includes list of recognized degrees other than MBBS awarded by Indian Societies and Boards, e.g LMP and diploma of CPS.
 - Part II: Includes list of recognized degrees other than MBBS awarded by Foreign Societies and Boards

656. Testamentary capacity is ?

a) Ability to give willful statement

b) Ability to make will

c) Ability to judge

d) None

Correct Answer - A

Ans. is 'b' i.e., Ability to make will

Testamentary capacity (testament = will) is the mental ability to make a valid will.

Will denotes any testamentary document. The requirement for a valid will are as follows.

A written and properly signed and witnessed document must exist.

The testator must be a major and of sound disposing mind at the time of making the will. Force undue influence or dishonest representation of facts, should not have been applied by others.

657. For diagnosis of insanity, maximum limit of observation?

a) 5 days

b) 10 days

c) 30 days

d) 50 days

Correct Answer - C

Ans. C. i.e., 30 days

- Insanity is characterized by certain abnormal mental and behavioral patterns. Simply insane means unsound mind, i.e. insane is the person which has unsound mind. Conversely sanity means sound mind (compos mentis).
- Lucid interval is the period of sanity (sound mind) in an insane person, i.e. period in course of mental illness when there is complete cessation of manifestations of insanity. During this period he is quite normal and can make valid will, sell/purchase property, give valid evidence and is legally responsible for his deeds.
- Before making a diagnosis of insanity, the patient may be kept under observation in mental hospital or general hospital/nursing home. Patient is kept under observation for 10 days, which can be extended upto maximum 30 days.
- Two doctors (at least one being a government doctor) should examine the patient separately without consulting each other for at least three examinations

658. Finger print was first established in ?

a) England

b) China

c) India

d) Singapore

Correct Answer - C

Ans. is 'c' i.e., India

- Finger prints were discovered by an ICS officer Sir William Herschelle (1958). But study was systemized by Sir Francis Gulton (1892) and was further improvized by Sir Edward Henery.
- Finger prints is the best system of identification till date and teeth (dental status) is considered the second best.
- The first ever finger print Bureau of the world was established at Calcutta (in Writer's building) in India

659. Locord's system is ?

a) Podography

b) Dactylography

c) Poroscopy

d) Cheiloscopy

Correct Answer - C

Ans. is 'c' i.e., Poroscopy

- Dactylography (Galton's system) —> Study of finger prints.
- Poroscopy (Locard's system) -4 Study of number, sizes and distribution of pores of sweat glands on ridges (used when only a part of finger print is available).
- Podogram --> Study of foot print.
- Cheiloscopy (queiloscopy) —> Study of lip prints.
- Rugoscopy (Palatoprints) Study of anterior part of palate.

660. Cheilography is the study of ?

a) Finger prints

b) Lip prints

c) Breath analysis

d) Foot prints

Correct Answer - B

Ans. is 'b' i.e., Lip prints

- Cheiloscopy or queiloscopy is the study of lip prints.
- Podogram is the study of foot prints which are due to ridge on the sole and toes of the foot.
- Palato prints (rugoscopy) is the study of anterior part of palate.
- Dactylography/Dermatoglyphics/Galton system- is the study of Finger prints. Finger print pattern is absolutely *individual i.e. no two hands are entirely alike, not even identical twins. That's why, it is best (most sensitive and most specific) and most reliable method of identification (Queetelet's rule of biological variation).*

661. Reliable method of identification of person is ?

a) Gustafson's method

b) Galton method

c) Scar

d) Anthropometry

Correct Answer - B

Ans. is 'b' i.e., Galton method

- Galton method or *Finger prints* or *dactylography* is the best system of identification till date.
- The fingerprints are capable of endless variation so that there is one chance in sixty four billions of two persons having identical prints.

Dactylography / Dermatoglyphics / Galton system / Finger prints

- Finger prints are present from birth both on epidermis and dermis, remain constant through out life and can't be altered without destroying true skin.
- Finger print pattern is absolutely individual i.e. no two hands are entirely alike, not even identical twins. That's why, it is best (most sensitive and most specific) and most reliable method of identification (Quetelet's rule of biological variation). DNA finger printing may be same in monozygotic twins.
- The pattern is neither inherited nor identical in any two persons. So the paternity cannot be proved through finger print patterns. However, paternity can be proved by DNA finger printing.
- Loops (67% most common) > whorls (25%) > arches (7%) > composite (2% least common) are four main types of pattern.
- It is accepted that chances of 2 finger prints matching 16 ridge characteristic are infinitely small (Parikh's). **Inpractice 8 - 16 (Reddy)**

/ 16 - 20 (Seth, Simpson) points of fine comparison are accepted as proof of identity.

- **Locard's poroscopy method** is study of microscopic pores, formed by mouths of ducts of subepidermal sweatgland present on ridges of fingers. These pores are permanent, remain unchanged during life and are very useful when only fragments of fingerprints are available. Each millimeter contains 9 - 18 pores.
- Criminals may attempt to mutilate finger prints by applying CO₂ snow, corrosive agents, burns or eroding against hard surface. But these manners do not destroy finger prints permanently unless true skin is completely destroyed.

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662. Length of tibia is ?

a) 10% of height

b) 20% of height

c) 30% of height

d) 40% of height

Correct Answer - B

Ans. is 'b' i.e., 20% of height

- Stature is determined in dismembered body (skeletal remains) by :
 1. Length from the tip of middle finger to the tip of opposite middle finger when arms are fully extended.
 2. Twice the length of one arm + 30 cm (of two clavicles) + 4 cm (for the sternum).
 3. Humerus length is $\frac{1}{5}$ th of height.
 4. The length from the vertex to the symphysis pubis is half of the total length.
 5. The length from the sternal notch to Symphysis pubis x 3-3.
 6. The length of forearm measured from tip of middle finger is $\frac{5}{19}$ of total length.
 7. The height of head measured by the vertical distance from the top of the head (vertex) to the tip of chin = $\frac{1}{8}$ of the total length.
 8. The length of vertebral column = $\frac{34}{100}$ of total length. To the length of entire skeleton, add 2.5 to 4 cm for thickness of the soft parts.
 9. As a general rule humerus is 20%, tibia is 22%, femur is 27% and spine is 35% of individual height.

663. First secondary ossification center appears in

- a) Lower end of femur
- b) Upper end of humerus
- c) Lower end of fibula
- d) Upper end of tibia

Correct Answer - A

Ans. is 'a' i.e., Lower end of femur

Site given in question	Secondary ossification center appears at

Lower end of femur	9th month intrauterine life

Upper end of tibia	At birth

Upper end humerus	1/2 -1 year of age

Lower end of fibula	1 year of age

664. Number of teeth can be counted by all the following methods except -

a) Gustafson method

b) Mile method

c) Boyde method

d) Frame method

Correct Answer - D

Ans. is 'd' i.e., Frame method

Age from teeth after 20 years

- Teeth eruption is useful for age estimation upto about 18 years, beyond which it is just a guess work. The methods used are :?
A. Gustafson's method : Useful only in persons older than 21 years of age, depending on the physiological changes in each of the dental tissues.
 - Attrition - due to wear and tear from mastication, upper surface of teeth destroyed gradually, first involving the enamel - dentine - pulp (depending on the functional use of teeth and hardness of enamel).
 - Paradentosis - recession of gums and periodontal tissue surrounding the teeth, exposing the neck and adjacent part of root - teeth fall off (poor hygiene increases paradentosis).
 - Secondary dentine formation - develop within the pulp cavity and decrease size of the cavity, start from base - apex, obliterate the cavity, increase with age, caries and paradentosis.
 - Cementum apposition - near the end of root, increase cementum, increase thickness, deposited throughout life, and form incremental lines (devised by Boyde).
 - Root resorption - because of cementum and dentine, absorption of root start at apex and extend upward (may be pathological).

6. Transparency of the root - seen after 30 years of age, canal in the dentine at first widens, increases with age because of deposition of minerals. They become invisible and dentine becomes transparent (Most reliable of all the criteria).

B. Mile's method : Age can be known by changes of root transparency.

C. Boyde's method : On enamel of the tooth, there is a line at birth (neonatal line). With increase in age, more lines are added, study of which helps in age determination.

D. Stack's method : Age of infant can be known from height and weight of erupting teeth.

665. Cephalic index is used for

a) Race

b) Age

c) Sex

d) Stature

Correct Answer - A

Ans. is 'a' i.e., Race

- Cephalic index, height index & nasal index are used for determination of race.
- Cephalic index = maximum breadth of skull/ maximum length of skull x 100

Type of skull	Cephalic index	Race
Dolichocephalic (long headed)	70 - 75	Pure Aryan, Aborigines, Negroes
Mesaticephalic (medium headed)	75 - 80	Europeans and Chinese
Brachycephalic (short headed)	80 - 85	Mongolian

666. All are signs of somatic death except ?

- a) Cessation of respiration
- b) Cessation of heart
- c) Non-responding muscles
- d) No response to external stimuli

Correct Answer - C

Ans. is 'c' i.e., Non-responding muscles

- Death denotes death of human being (46 IPC). It is defined as cessation of life or cessation to exist. Death is of two types (1) somatic death (systemic death or clinical death) and (2) molecular death (cellular death).

Somatic death (systemic death or clinical death)

- It is the complete and irreversible stoppage of the circulation, respiration and brain functions (bishop's tripod of life). Somatic death is associated with immediate signs of death :?
 1. Permanent and complete cessation of function of brain and flat electric EEG with no response to external stimuli; i.e. brain death.
 2. Permanent and complete cessation of function of heart and flat ECG.
 3. Permanent and complete cessation of function of lungs.
- Somatic death is due to stopped aerobic processes. However, anaerobic enzymatic processes are still continuing, hence (i) muscles still respond to mechanical, electrical and thermal stimuli, (ii) pupils still respond to miotics and mydriatics.

Molecular death (cellular death)

- It occurs after somatic death. *It refers to death of all individual cells.* It occurs when even anaerobic processes stop, due to non availability of ATP. At this stage :

1. Muscles do not respond to stimuli.
2. Pupils do not respond to stimuli or drugs.
3. There are early signs and late signs of death :
 - Early signs : Changes in skin and eye, cooling of the body, post-mortem lividity, changes in muscles (e.g. primary relaxation, rigor mortis).
 - Late signs : Decomposition (putrefaction), adipocere formation and mummification.
4. Molecular death of various organs occur at different intervals after somatic death :
 1. Nervous tissue —> After 5 minutes.
 2. Liver ---> After 15 minutes.
 3. Heart —> After 45 minutes.
 4. Kidney —> After 1 hours.
 5. Muscles —> After 3 hours.
 6. Cornea —> After 6 hours.
 7. Blood After 6 hours.

667. The ideal place to record body temperature in dead body is ?

a) Rectum

b) Axilla

c) Mouth

d) Groin

Correct Answer - A

Ans. is 'a' i.e., Rectum

- Most common site for recording temperature is the rectum.
- Thermameter is inserted in rectum around 8-10 cm for 2 minutes.
- Other sites for recording temperature are nose, ear (external auditory meatus), vagina, and under liver.

668. Elderly individual living alone in a temperate zone is found dead one morning. The electric heater is found to be damaged. The rigor mortis will set in:
NEET 14

a) Earlier than expected

b) Later than expected

c) Will not set in

d) Will set in as expected

Correct Answer - A
Ans. Earlier than expected

669. Putrefaction is delayed in all except ?

a) Warm moist atmosphere

b) Carbolic acid poisoning

c) Anemia

d) Heavy metals poisoning

Correct Answer - A

Ans. is 'a' i.e., Warm moist atmosphere

Factors causing delay of putrefaction

- Temperature $<0^{\circ}\text{C}$ or $>48^{\circ}\text{C}$ (very high temperature).
- Dry weather and/or decreased air velocity.
- More than 2 meter deep grave.
- Tight clothing.
- Body in dry soil, and body packed in coffin.
- Infant not fed.
- Wasting diseases like anemia.
- Poisoning : Carbolic acid, ZnCl_2 , strychnine (nux vomica), and heavy metals (arsenic, antimony).
- In water slower than in air (casper's dictum).

Factors facilitating putrefaction

- Putrefaction is facilitated by (i) free access of air (ii) moisture and (iii) optimum warmth (10°C - 45°C). Thus decomposition is fast in shallow damp, marshy shallow graves, in bodies without clothes and coffin.

670. Difference between contusion and post-mortem lividity is that post-mortem lividity ?

a) Shows sequential color change

b) Easily washable

c) Shows diffuse irregular margins

d) Has raised enzyme levels

Correct Answer - B

Ans. is 'b' i.e., Easily washable

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671. Virchow method of organ removal is ?

- a) Organs removed en masse
- b) Organs removed one by one
- c) In situ dissection
- d) None

Correct Answer - B

Ans. is 'b' i.e., Organs removed one by one

Methods of removal of organs

- Virchow's technique - organs are removed one by one. Cranial cavity is exposed first, followed by thoracic, cervical & abdominal organs.
- Rokitansky's technique - It involves in situ dissection in part, combined with en block removal.
- Lettulle's technique - Cervical, thoracic, abdominal & pelvic organs are removed en masse & dissected as organ block.

672. Method of autopsy in which various systems organs are removed en masse ?

a) Rokitansky

b) Virchow

c) Gasses

d) Lettulle

Correct Answer - D

Ans. is 'd' i.e., Lettulle

Methods of removal of organs

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673. Time limit of exhumation in India is -

a) One month

b) One year

c) Ten years

d) No limit

Correct Answer - D

Ans. is 'd' i.e., No limit

Exumation

- It is lawful digging out of a buried body from the grave for the purpose of identification or determination of cause of death.
- Only a magistrate (executive magistrate) can order for exhumation.
- In india, there is no time limit for exhumation, i.e. can be done at any time after death.
- It is done under supervision of medical officer and Magistrate in presence of a police officer who provides witnesses to identify grave, coffin and dead body, whenever possible, Magistrate should inform the relatives and allow them not to remain present at the time of enquiry.
- The whole procedure should be conducted and completed in natural day light. Therefore, it is usually started early in morning.

674. Ideal time to start exhumation ?

a) Mid night

b) Late evening

c) Afternoon in proper light

d) Early morning

Correct Answer - D

Ans. is 'd' i.e., Early morning

Exumation

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- Therefore, it is usually started early in morning.

675. Shape of stab wound depends on-

a) Edge of weapon

b) Shape of weapon

c) Width

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

- A stab wound is an injury caused by a more or less *sharp pointed weapon* when it is driven in through the skin and its depth is the greatest dimension.
- The size and shape of the stab wound in the skin is dependent on the type of weapon, cutting surface, edge sharpness, width and shape of weapon, body region stabbed, the angle of withdrawal, the direction of thrust, the movement of blade in body, cleavage direction, movement of person stabbed and the condition of tension or relaxation of skin.
- With a double-edged weapon the shape of the wound will be elliptical or slit like and both angles will be sharp or pointed.
- With a single-edged weapon, the shape will be triangular or wedge shaped and one angle of the wound will be sharp, the other rounded, blunt, or squared-off. Blunt end on the skin may have small splits, so-called "fish-tailing" if the back edge of the blade is heavy.
- A spear or another round object causes a circular wound.

676. All are true about antemortem contusion except?

- a) Sequential color change
 - b) No inflammation
 - c) Raised enzyme levels
 - d) Blood cells in surrounding tissue
- Accidental

Correct Answer - B
Ans. is 'b' i.e., No inflammation

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677. Graze is a type of ?

a) Bruise

b) Contusion

c) Laceration

d) Abrasion

Correct Answer - D

Ans. is 'd' i.e., Abrasion

Abrasion

- It is a destruction of the skin, which involves the superficial layers of the epidermis only. They are of 4 types:
 1. Scratches- its a abrasion with length but no significant width or a a very superficial incision.
 2. Grazes-most common. They occur when there is movement between the skin and some rough surface in contact with it.
 3. Pressure or friction abrasion- they are caused by crushing of the superficial layers of the epidermis and are associated with a bruise of the surrounding area.
 4. Impact or contact abrasion- they are caused by impact with a rough object, when the force is applied at or near a right angle to the skin surface.
 5. Patterned abrasion- impact abrasion and pressure abrasion reproduce the pattern of the object causing it and are called Patterned abrasion.

678. Brown color of contusion is due to -

a) Haematodin

b) Reduced hemoglobin

c) Haemosiderin

d) Bilirubin

Correct Answer - C

Ans. is 'c' i.e., Haemosiderin

Color change and age of bruise (Contusion)

- After a bruise has appeared, it tends to get smaller from periphery to center and passes through a series of colour changes. These are due to disintegration of RBCs by hemolysis and breakdown of hemoglobin into the pigments haemosiderin, haematodin and bilirubin changes are : -
 1. At first : Red (oxyhemoglobin)
 2. Few hours to 3 days : blue (reduced hemoglobin)
 3. 4th day : Bluish-black to brown (haemosiderin)
 4. 5-6 days : Greenish (haematodin)
 5. 7-12 days : Yellow (Bilirubin)
 6. 2 weeks : Normal (absorption of pigment)

679. Primary injury is ?

a) Due to flying debris b

b) Due to blast wind

c) Due to shock wave

d) Due to complication

Correct Answer - C

Ans. is 'c' i.e., Due to shock wave

Types of blast injuries

- These are of following types :?
 1. Primary : It is *due to shock wave* which causes injury to hollow organs. e.g. ears, lungs, eyes, GIT etc.
 2. Secondary : These are *due to flying debris (missiles)*. Classical Marshalls triad i.e. bruises, abrasions and puncture laceration is diagnostic of explosive injury.
 3. Tertiary : It is *due to blast wind*, i.e. victim is thrown into air and strikes other objects leading to fracture, blunt trauma etc.
 4. Quaternary : Any complicating factor (not in first three categories) causes quaternary injury, e.g. anoxia, respiratory problems etc

680. Organs first to be injured in air blast:
NEET 13

a) Ear, lung

b) Kidney, spleen

c) Pancreas, duodenum

d) Liver, muscle

Correct Answer - A
Ans. Ear, lung

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681. Most common organ involved in air blast injury is ?

a) Ear drum

b) Stomach

c) Eye

d) Lung

Correct Answer - A

Ans. is 'a' i.e., Ear drum

Blast or shock wave

- When an explosion occurs, the explosive material produces a large volume of gas and releases a large amount of energy. It produces a '*shock wave*' which spread concentrically from the site of explosion. The injuries depend on the environment in which blast occurs :-
 1. Air blast (most common) : Explosion occurs in air. There is barotrauma to air filled hollow organs. Tympanic membrane (ear drum) is most sensitive and most commonly injured. Lung is the second organ to be injured and is the most commonly injured hollow organ and most common cause of life threatening injury. Other parts injured are middle ear, cochlea, eyes, bowels, mesentery, omentum and brain. Homogenous solid organs like liver and muscles are usually not affected.
 2. Under water blast (explosion under water) : Gastrointestinal tract is injured most commonly. Lungs are also injured.
 3. Solid blast : Explosive is detonated near a rigid/solid structure and wave of energy spreads through it. If people are in contact with that rigid structure, injuries take place. The injuries are mostly skeletal; fracture of legs and vertebral column are more common. GIT damage is more common than lung

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682. In blast injury, what is the organ to be damaged first-

a) Tympanic membrane

b) Git

c) Liver

d) Lung

Correct Answer - A

Ans. is 'a' i.e. Tympanic membrane

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683. Telefono means ?

a) Beating on soles

b) Beating on palms

c) Beating on ears

d) Pulling of hair

Correct Answer - C

Ans. is 'c' i.e., Beating on ears

- Telefono : Simultaneous beating of both ears with the palm of hands. This may lead to rupture of tympanic membrane, causing pain, bleeding and hearing loss. It is difficult to detect this. The external ear may also get torn during pulling of the ears.
- Falanga : beating of soles with blunt object. It is the most common type of torture. It can cause immediate & long term consequences, even disability

684. Tattooing around the entry wound is seen in ?

a) Close shot

b) Contact shot

c) Distant shot

d) All of the above

Correct Answer - A
Ans. is 'a' i.e., Close shot

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685. Which is incorrect about exit wound of a bullet ?

a) Bevelled

b) Everted

c) Abrasion collar

d) No COHb

Correct Answer - C

Ans. is 'c' i.e., Abrasion collar

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**686. chocking of respiratory passage by
bolus of food ?**

a) Gaging

b) Overlying

c) Cafe coronary

d) Burking

Correct Answer - C

Ans. is 'c' i.e., Cafe coronary

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687. Term cafe coronary was coined by ?

a) Roger Haugen

b) J. Morton

c) Neil Markson

d) M. Hoppefield

Correct Answer - A

Ans. is 'a' i.e., Roger Haugen

A popular term 'cafe coronary' was coined by Dr. Roger Haugen, Medical Examiner of Broward County, Florida for such impaction of food in the respiratory passage". — Krishan Vij

688. Cause of death in cafe coronary ?

a) Chocking

b) Laryngeal edema

c) Cardiac arrest

d) Pulmonary edema

Correct Answer - C

Ans. is 'c' i.e., Cardiac arrest

- Both asphyxia and cardiac arrest are causes of death in café coronary.
- Most of the guides have given asphyxia as the answer. But according to me cardiac arrest is the better one. Read following statements :

"Death appears to be due to sudden heart attack." — Reddy

"The bolus of food obstructs the larynx, stimulating laryngeal nerve, so stimulating vagus nerve and thus resulting in sudden cardiopulmonary arrest and thereby sudden death." — S.K. Singhal

"Death is due to asphyxia or reflex cardiac arrest." — Parikh

"Death occurs due to cardiac arrest following parasympathetic stimulation through laryngeal nerve ending." — R.N. Karmaker

689. Cafe cornoray commonly occurs when a person is-

- a) Intoxicated
- b) Eating fatty food
- c) Eating meat
- d) Eating fish

Correct Answer - A

Ans. is 'a' i.e., **Intoxicated**

- Cafe coronary : It refers to accidental choking by bolus of food obstructing larynx. Death is mostly due to asphyxia, or due to reflex cardiac arrest caused by stimulation of laryngeal nerve endings. It is common when gag reflex is suppressed, e.g. intoxicated individuals and following large doses of tranquilizers.

690. Mugging is compression of neck by ?

a) Wooden sticks

b) Rope

c) Forearm

d) Hand

Correct Answer - C

Ans. is 'c' i.e., Forearm

- Mugging (choke hold) : It is compression of neck by forearm *or in the bend of elbow.*
- Bansdola : Compression of neck with *one or two wooden sticks or bamboo.*
- Garrotting : It is compression of neck by a *rope thrown from behind.* Spanish windlass is a type of garrotting, which used to be the official mode of execution in Spain. In this, an iron collar around the neck was tightened by a screw for strangulation.
- Throttling (manual strangulation) : Neck is compressed by one or both hands.

**691. Bansdola is a form of strangulation
by:
NEET 14**

a) Ligature

b) Hands

c) Wooden sticks

d) Bend of elbow

Correct Answer - C

Ans. C. Wooden sticks

Depending upon the method used to constrict the neck, strangulation can be divided into :

Ligature strangulation :

* Neck is compressed by a ligature of which usually multiple rounds are given and no knot is tied.

Throttling (manual strangulation) :

* Neck is compressed by one or both hands.

* When neck is compressed by two palms, it is known as palmar strangulation.

Bansdola :

* Compression of neck with *one or two wooden sticks or bamboo*.

Garrotting :

* It is compression of neck by a *rope thrown from behind*. Spanish windlass is a type of garrotting, which used to be the official mode of execution in Spain. In this, an iron collar around the neck was tightened by a screw for strangulation.

Mugging (choke hold) :

* It is compression of neck by forearm or in the bend of elbow.

Strangulation by knee/foot :

* In this, neck is compressed by knee or foot.

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692. Suicidal mark is horizontal in ?

a) Hanging

b) Strangulation

c) Both of the above

d) None of the above

Correct Answer - B
Ans. is 'b' i.e., Strangulation

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**693. Hyoid bone fracture does not occur
in:
NEET 14**

a) Hanging

b) Strangulation

c) Throttling

d) Choking

Correct Answer - D

Ans. Choking

[Ref Parikh 6th Ve p. 3.24]

- It is very simple question. Hyoid fracture will occur only when there is pressure on hyoid (neck) from outside.
- In choking, there is no pressure on hyoid.
- **Fracture of hyoid : Throttling (manual strangulation) > ligature strangulation > Hanging.**

694. The outer covering of diatom is made of ?

a) Magnesium

b) Silica

c) Hydrocarbons

d) None

Correct Answer - B

Ans. is 'b' i.e., Silicon

- The extracellular coat of diatoms has silica.
- Diatoms are unicellular algae, suspended in water.
- They have siliceous cell wall (i.e. cell wall contains silica) which resist acid digestion and putrefaction.
- Only live body with a circulation can transport diatoms from lung to brain, bone marrow, muscles etc.
- So, presence of diatoms in brain and bone marrow indicates death due to drowning.
- For detection of diatoms, bone marrow of long bones, e.g. femur, tibia, humerus or sternum is highly suitable and reliable.
- As diatoms resist acid digestion, to extract them acid digestion technique is used.
- Diatoms test is negative in dead bodies thrown in water and in dry drowning.
- However, diatoms test is invalid, if deceased had drunk this water before submersion or species of diatoms do not match with specimen from the site of drowning

695. What does Gettlers test detects ?

- a) Diatoms in drowning
- b) Chloride content of blood in drowning
- c) Weight in drowning
- d) None

Correct Answer - B

Ans. is 'b' i.e., Chloride content of blood in drowning

- Gettler test estimates chloride content of blood from both sides of heart.
- It is done for drowning.
- Normally the chloride content is equal in the right and left chambers of the heart (600 mg/100 ml). In fresh water drowning due to hemodilution the chloride content is decreased and in salt water drowning due to hemoconcentration the chloride content is increased in left side of heart.
- A 25% difference in chloride is significant but the test is of doubtful value.

696. Immersion syndrome is also called as ?

- a) Hydrocution
- b) Wet drowning
- c) Dry drowning
- d) Secondary drowning

Correct Answer - A

Ans. is 'a' i.e., Hydrocution

- Immersion syndrome - is also called as hydrocution or submersion inhibition or vagal inhibition.

Atypical drowning

- It refers to drowning in which even after submersion of body in water, little or no water enters respiratory passages and lungs. Hence typical findings of wet drowning in the form of froth and oedema aquosum of lungs are not found. Atypical drowning may be :
 1. Dry drowning : On contact with water, especially cold water, there results intense laryngospasm, so that water does not enter the lungs. Death is due to asphyxia because of laryngospasm.
 2. Immersion syndrome (hydrocution/submersion inhibition/vagal inhibition) : Sudden death occurs due to vagal inhibition as a result of (a) sudden impact with cold water, (b) duck diving (falling in water with feet first), and (c) horizontal entry in water with impact on epigastrium.
 3. Submersion of unconscious : If person is unconscious since before submersion in water, little or no water enters respiratory passages. It may occur in MI, cerebrovascular accident, hypertension, epilepsy, cerebral aneurysm and in drunk state.
 4. Near drowning (secondary drowning syndrome/post immersion

syndrome) : In this drowning is survived and death occurs at a later stage after removal from water. Either the person himself comes out of water or he is recovered alive, but due to complications of submersion, he dies at a later stage. It is due to hypoxic encephalopathy and fibrosing alveolitis. The death occurs due to combined effect of cerebral hypoxia, pulmonary edema, aspiration pneumonitis, electrolyte disturbances and metabolic acidosis.

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697. Platauf's hemorrhages, incorrect is ?

- a) Sign of drowning
- b) Subpleural hemorrhage
- c) Mostly seen in middle lobe
- d) All are true

Correct Answer - C

Ans. is 'c' i.e., Mostly seen in middle lobe

Platauf's hemorrhages

- They are subpleural haemorrhages present in cases of drowning when alveolar walls rupture due to increased pressure during forced expiration and produce haemorrhages.
- They are shining pale pink or bluish red, and may be minute or 3-5cm in diameter seen in lungs.
- They are usually present in about 50 % cases in lower lobes of lungs but may be seen on the anterior surfaces of lungs and the interlobar surfaces.

698. Most common drowning in India-

a) Suicidal

b) Homicidal

c) Accidental

d) Infanticide

Correct Answer - C

Ans. is 'c' i.e., Accidental

- Most of the cases of drowning (2/3) in India are accidental. Rest 1/3 being suicidal. Homicidal drowning is less common in India.
- Suicidal drowning is indicated by absence of signs of struggle or assault (e.g. torn clothes, injury marks). A determined suicide may tie his hands and legs together or attach weights to his body or take poison or cut throat before immersion.
- In homicidal drowning, there are signs of struggle and violence (assault) (e.g. head injury, signs of strangulation, or throttling). Head and feet may be tied, heavy weight may be attached to body or body may be tied up inside a gunny bag. Homicidal drowning is very rare except in infants and children.
- Accidental drowning is quite common and usually seen in children, non-swimmers, during floods or due to fall in well etc.

699. Diagnostic of antemortum drowning ?

- a) Paltauf's hemorrhage
- b) Weeds and grass in clenched hands
- c) Emphysema aquosum
- d) Water in esophagus

Correct Answer - B

Ans. is 'b' i.e., Weeds and grass in clenched hands

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700. All tests are used for infanticide except ?

a) Ploucquet test

b) Fodere's test

c) Gettler's test

d) Raygat's test

Correct Answer - C

Ans. is 'c' i.e., Gettler's test

Tests used in infanticide (for respiration)

- Ploucquet's test : Weight of lung is measured in relation to body weight. Before birth weight of lung is 1/70 of body weight and after respiration it becomes 1/35 of body weight due to increased blood flow in lung beds.
- Static test or Fodere's test : The average weight of both lungs before respiration is 30-40 gm and after respiration is 60-70 gm.
- Hydrostatic test (Raygat's test, 1" life test) : The specific gravity of a non-respired lung is 1040-1050 and of a respired lung is 940-950, so, after respiration lung floats on water (specific gravity of water is 1000). False positive hydrostatic test may occur (i.e. non-respired lung may float) in decomposition and in attempted artificial respiration. False negative hydrostatic test (i.e. respired lung may sink down) may occur in atelectasis, pulmonary oedema, bronchopneumonia, and congenital syphilis.
- Breslau's second life test : It assumes that a live born child would respire and therefore, would also swallow some air into the stomach and bowel. Hence they float on water. This test is falsely positive in putrefaction (due to putrefied gases) or in cases of attempted artificial respiration.
- Werdnig's test : Before birth middle ear contains gelatinous embryonic

tissue which is replaced by air after respiration

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701. Raygat's test is used for ?

- a) Weight of lung
- b) Specific gravity of lung
- c) Consistency of lung
- d) None

Correct Answer - B

Ans. is 'b' i.e., Specific gravity of lung

- Hydrostatic test (Raygat's test, 1" life test) : The specific gravity of a non-respired lung is 1040-1050 and of a respired lung is 940-950, so, after respiration lung floats on water (specific gravity of water is 1000). False positive hydrostatic test may occur (i.e. non-respired lung may float) in decomposition and in attempted artificial respiration. False negative hydrostatic test (i.e. respired lung may sink down) may occur in atelectasis, pulmonary oedema, bronchopneumonia, and congenital syphilis.

702. Intercourse in closely related individual in relation?

a) Incest

b) Adultery

c) Bestiality

d) Tribadism

Correct Answer - A

Ans. is 'a' i.e., Incest

Incest

- It means sexual intercourse by a man with a woman who is closely related to him by blood (prohibited degrees of relationship). Example daughter, granddaughter, sister, stepsister, aunt, or mother.
- These cases usually have psychological features.
- In India, incest is not an offence.

Adultery

- Adultery refers to voluntary sexual intercourse between a married person and a person (married or not), other than his/her spouse.

Bestiality

- It is the sexual intercourse by a human being with a lower animal.

Tribadism (Lesbianism or female homosexuality)

- Sexual gratification of a woman obtained by another woman by kissing, body contact, manipulation of breast and genitalia. Active partner is called dyke or butch and the passive agent is called femme. This is not an offence in India.

703. Incest is defined as sexual intercourse between ?

- a) Man and animals
- b) Man and closely related women
- c) Man and women other than wife
- d) Man and man

Correct Answer - B

Ans. is 'b' i.e., Man and closely related women

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704. Most common hymen rupture in a virgin is ?

a) Anterior

b) Anterolateral

c) Posterolateral

d) Posterior

Correct Answer - C

Ans. is 'c' i.e., Posterolateral

Hymen rupture:

- Congenital : anterior
- Due to intercourse or foreign body: posterolateral (4/8 or 5/7 O' clock) > posterior (6 O' clock).
- In virgin rupture (tears) of hymen due to sudden stretching occurs in posterior half of membrane usually at the sides (i.e. posterolaterally) in 4 or 8'O clock or 5 or 7'O clock position, or in the midline of hymen (6'O clock position).
- With first intercourse tears usually occur in posterior midline because the hymen lies suspended across a potential space here, whereas anteriorly periurethral tissues buttress the hymen.
- More than 2 tears are unusual, Semilunar hymen often ruptures on both sides. Annular hymen which nearly closes up the vaginal orifice may suffer several hymenal lacerations indicate first sexual intercourse.
- One deep 'V' shaped cleft/tear at 6' O clock or a number of clefts usually in posterior half hymen membrane indicate passage of any object through hyme orifice which is larger its original opening.'
- In prepubertal children posterior tear may involve fourchette producing a deep U shaped defect. Fourchette is torn, fossa

navicularis disappear and posterior commissure may be ruptured. The latter injury usually does not occur in consenting sexual intercourse unless there is much disproportion between the male and female parts.

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705. Quod Hanc means ?

- a) Passive partner in sexual intercourse
- b) Women having high sexual desire
- c) Sexual parterner in pedophilia
- d) Male impotent to particular women

Correct Answer - D

Ans. is 'd' i.e., Male impotent to particular women

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706. Latte's crust of blood stain is used to detect ?

- a) Nature of stain
- b) Detection species
- c) Blood group
- d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Blood group

Blood and blood stains

- The examination of blood and blood stains is an important part of crime detection. The points that are usually required to be determined regarding stains are : (1) nature of stain (whether the stains is blood or not); (2) the species (human or animal) from which the blood has come from; and (3) blood group.

Nature of stain (whether the stain is blood or not)

- To determine the nature of stain, following tests are used :

1. Chemical tests

- .. These tests are based on the peroxidase activity of haematin, which is, derived from oxidation of haem of haemoglobin or methemoglobin, present. This enzyme, in the presence of hydrogen peroxide converts colourless salts into coloured bases. Thus these tests are based on H_2O_2 and peroxidase enzyme. Tests are :
 1. Benzidine test: Greenish blue colour.
 2. Phenolphthalein test (kastle myere test) : Deep permanganate colour.
 3. Leucomalachite green test : Bluish green or peacock blue colour.
 4. Guaiacum test : Blue colour.

- 5. Orthotoluidine test (Kohn test) : Blue or green colour.
- 7. Amidopyrine test : Purple colour.

2. Microchemical tests

- These tests are based on property of haem part of hemoglobin to form characteristic coloured crystals. The tests are :
 - 1. Teichmann's haemin crystal test.
 - 2. Takayama hemochromogen crystal test.
 - 3. Luminal spray test : It is especially useful in old obscure blood stains.
 - 4. Spectroscopy
 - It is most delicate and reliable test. It is based on the principle that hemoglobin and its derivatives give characteristic absorption bands when viewed through a spectroscope.

4. Microscopy

- Microscopic examination of RBCs is possible only in fresh stains.
- Detection of species (whether the blood has come from human or animal)**
 - For detection of species, serological (immunological) tests are used. These tests are :
 - 1. Precipitin test
 - 2. Haemagglutination inhibition test (antiglobulin consumption test or absorption inhibition test).
 - 3. Gel diffusion test.
 - 4. Double diffusion test.
 - 5. Precipitation electrophoresis.
 - 6. Latex agglutination test.
 - 7. Isoenzyme method (enzymological test).

Detection of blood group of blood stain

- These tests are :
 - 1. Immunological (serological) : (i) absorption-elution test, (ii) absorption-inhibition test, (iii) mixed agglutination test, (iv) latex test.
 - 2. Enzymological methods.
 - 3. Latte's crust method.

707. Rule of 9 in burns is used to denote ?

a) Depth of burns

b) % of total body surface area

c) Severity of burns

d) Type of burns

Correct Answer - B

Ans. is 'b' i.e., % of total body surface area

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708. All are immediate causes of death in a case of burn, except ?

a) Suffocation

b) Embolism

c) Injury

d) Sepsis

Correct Answer - D

Ans. is 'd' i.e., Sepsis

Causes of death in burns

- Causes of death in burns may be divided into :
 - 1. Causes of immediate death : These are (1) neurogenic shock (primary shock), (2) hypovolaemic shock (secondary shock), (3) suffocation, due to inhaled CO, CO₂, (4) cyanide intoxication, (5) fat embolism, (6) cerebral or pulmonary edema, and (7) accidental injuries during burn.
 - 2. Causes of delayed death : These are : (1) renal failure (acute tubular necrosis), (2) infections (sepsis, gangrene, tetanus) and (3) centrilobular necrosis of liver.

709. The most common subtype of Non-Hodgkin's lymphoma in India is:

- a) Diffuse small cell lymphocytic lymphoma
- b) Diffuse large B cell lymphoma
- c) Follicular lymphoma
- d) Burkitt's lymphoma

Correct Answer - B

Answer- B. Diffuse large B cell lymphoma

- The most common subtype of Non-Hodgkin's lymphoma in India is diffuse large B cell lymphoma.
- Diffuse large B-cell lymphoma: MC subtype (34%)
- Follicular centre-cell lymphomas: 12.6% .
- B-cell small lymphocytic lymphoma: 5.7%
- Mantle-cell lymphoma: 3.4%
- Marginal zone B-cell lymphomas (including MALT lymphomas): 8.2%

710. Gene responsible for mutation of HBV is ?

a) X gene

b) S gene

c) P gene

d) C gene

Correct Answer - D

Ans. is- D- i.e., C gene

- Two categories of naturally occurring HBV variants have attracted the most attention.
- One of these was identified initially in Mediterranean countries among patients with an unusual serologic clinical profile. They have severe chronic HBV infection and detectable HBV DNA but with anti-HBe instead of HBeAg.
- These patients were found to be infected with an **HBA mutant that contained an alteration in the pre-core region rendering the virus incapable of encoding HBeAg.**
- Another **mutation, in the core-promoter region,** prevents transcription of the coding region for HBeAg and yields an HBeAg-negative phenotype.
- Patients with such mutations in the pre-core region and who are unable to secrete HBeAg tend to have severe liver disease **that progresses more rapidly to cirrhosis, or they are identified clinically** later in the course of the natural history of chronic hepatitis B when the disease is more advanced.
- Both "wild-type" HBV and pre-core-mutant HBV can coexist in the same patient, or mutant HBV may arise late during wild-type HBV infection

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711. The statements regarding falciparum malaria are all except

- a) Haemoglobinuria and renal failure
- b) Hypoglycemia
- c) Cerebral malaria
- d) Adequately prevented with chloroquine therapy

Correct Answer - D

Ans. is 'd' i.e., Adequately prevented with chloroquine therapy [Ref CMDT-14 Chapter 35 p.1491]

- Most species of *P. falciparum* are resistant to chloroquine (so, it does not effectively prevent *P. falciparum* malaria).

***P falciparum* malaria can cause :-**

1. Cerebral malaria with impaired consciousness.
2. Black water fever causing hemolysis, hemoglobinuria and renal failure.
3. Hypoglycemia
4. Bleeding
5. Pulmonary edema
6. Acidosis

712. Which of the following is true about malaria ?

- a) Gametocyte harbourers are carrier
- b) All stage in erythrocytic schizogony seen in falciparum infection in peripheral blood
- c) Schizonts of vivax do not completely fill the RBC
- d) All the correct

Correct Answer - A

Ans. is 'a' i.e., Gametocyte harbourers are carrier

- * The individual who harbours the gametocytes is known as a carrier.
- * Only ring form (young trophozoites) and gametocytes are seen in peripheral blood.
- * Schizont of *P. vivax* almost completely fills an enlarged R.B.C.

713. Amoebic liver abscess can be diagnosed by demonstrating-

- a) Cysts in the sterile pus
- b) Trophozoites in the pus
- c) Cysts in the intestine
- d) Trophozoites in the feces

Correct Answer - B

Ans. is 'b' i.e., Trophozoites in the pus

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714. Pseudomembranous colitis, all are true except -

- a) Toxin A is responsible for clinical manifestation
- b) Toxin B is responsible for clinical manifestation
- c) Blood in stools is a common feature
- d) Summit lesions is early histopathological finding

Correct Answer - C

Ans. is 'c' i.e., Blood in stools is a common feature

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715. All are seen with *Pneumocystis carini* in AIDS except

- a) Pneumonia
- b) Otic polypoid mass
- c) Ophthalmic choroid lesion
- d) Meningitis

Correct Answer - D

Ans. is' i.e., Meningitis

- *P. jiroveci* (formerly known as *P. carinii*) causes interstitial pneumonia in AIDS patients.
- *Pneumocystis* otomastoiditis present with unilateral otalgia, otorrhea, hearing loss and a polypoid mass on otoscopy.
- Ocular *pneumocystis* is typically restricted to choroidal layer producing multiple focal circumscribed creamy to yellow-white lesions

716. Treponema pallidum was discovered by ?

a) Robert Koch

b) Twort

c) Schaudinn and Hoffman

d) Ellerman

Correct Answer - C

Ans. is 'c' i.e., Schaudinn and Hoffman

Bacteria	Discovered by
Lepra bacillus (M. Leprae)	Hansen (1874)
Gonococcus	Neisser (1879)
Staphylococcus	Ogston (1881)
Diphtheria bacillus (C. Diphtheria)	Loeffler (1884)
Tetanus bacillus (C. Tetani)	Nicolaier (1884)
Pneumococcus	Fraenkel (1886)
Causative organism for Malta fever (Brucella)	Bruce (1887)
<i>Spirochete of syphilis (T pallidum)</i>	<i>Schaudinn and Hoffmann (1905)</i>

717. Mycobacterium tuberculosis was discovered by ?

a) Louis pasteur

b) Robert koch

c) Lister

d) Jener

Correct Answer - B

Ans. is 'b' i.e., Robert koch

Scientist	Associated with
Fracastorius	Proposed a <i>contagium vivuim</i> (cause of infectious disease)
Von Plenciz	Suggested that each disease is caused by a separate agent
Augustino Bassi	Earliest discovery of pathogenic microorganism
Davaine and Pollender	Observed anthrax bacilli in blood of animal
Louis Pasteur	<i>Father of microbiology</i> (Also see above explanation)
Robert Koch	<i>Father of medical microbiology</i> <i>Discovered M. tuberculosis and V cholerae</i> Introduced staining techniques methods of obtaining bacteria in pure culture on solid media <i>Suggested Koch's postulate</i>
Joseph Lister	<i>Father of Aseptic surgery</i> Proved that sepsis could be prevented by

Antony Van Leeuwenhoek	Proved that sepsis could be prevented by Hand hygiene <i>Invented microscope (Father of compound microscope)</i> <i>Father of Bacteriology</i>
Edward Jenner	<i>Father of Immunology</i>
Peyton Rous	Isolated virus causing sarcoma in fowl
Von Behring & Kitasato	Described antibody

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718. All organisms shows bipolar staining except ?

a) Calymmatobacter granulomati

b) Y. pestis

c) Pseudomonas mallei

d) H. influenzae

Correct Answer - D

Ans. is 'd' i.e., H. influenzae

Safety pin appearance (Bipolar staining)

- 1. Yersinia pestis
- 2. Vibrio parahemolyticus
- 3. Burkholderia mallei
- 4. Burkholderia pseudomallei
- 5. Klebsiella granulomatis

719. Which of the following is not capsulated ?

a) Pneumococcus

b) Cryptococcus

c) Meningococcus

d) Proteus

Correct Answer - D

Ans. is 'd' i.e., Proteus

Capsule

- Many bacteria secrete a *viscid material* around the cell surface.
- When this is organized into a sharply defined structure, it is known as *capsule*.
- Capsules are protective and protect the bacteria from phagocytosis and from lytic enzymes.
- Some bacteria lose their capsules on repeated subcultures.

Capsulated organisms

Pneumococcus

Yersinia

Bacillus anthrax

V. parahemolyticus

Bordetella

H. influenzae

Meningococci

Fresh strains of staphylococci, streptococci and 'E coli.

Cl. perfringens and Cl. butyric=

Bacteroides

Klebsiella

Cryptococcus.

720. Pseudomonas is which type of bacteria ?

- a) Anaerobic
- b) Microaerophilic
- c) Microaerophilic
- d) Obligate anaerobe

Correct Answer - C
Ans. is 'c' i.e., Microaerophilic

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721. Specific reason to disallow the sample for culture?

- a) Sample brought within 2 hr of collection
- b) Sample brought in sterile plastic container
- c) Sample brought in formalin
- d) Sample obtained after cleaning the collection site

Correct Answer - C

Ans. is 'c' i.e., Sample brought in formalin

Guidelines for proper specimen collection

- Collect specimen before administering antibiotics or antivirals when possible.
- Collect specimen with as little skin contamination as possible to ensure that the sample collected represents the infected site.
- Utilize appropriate collection devices. Use sterile equipment and aseptic technique to collect specimens to prevent introduction of microorganisms during invasive procedures.
- Clearly label the specimen container with patient's name, hospital number or other identifying number (i.e. birth date, requisition number), date and time of collection.
- Collect an adequate amount of specimen. Inadequate amounts of specimen may yield false-negative results.
- If a specimen is collected through intact skin, cleanse the skin first. For example, use 70% alcohol followed by iodine solution (1 to 2% tincture of iodine or 10% solution of povidone iodine).
- Collect fluid specimens in sturdy, sterile, screw cap, leak proof containers with lids that do not create an aerosol when opened.
- Specimens obtained by a physician using needle aspiration should be transferred to a sterile tube or anaerobic transport vial prior to

transport of the specimen to the laboratory. If there is little material in the syringe, the physician should draw a small amount of sterile nonbacteriostatic 0.85% NaCl through the syringe and then transfer the specimen to a sterile tube. Alternatively, and ONLY if the specimen will be compromised by transferring it from the syringe, a small amount of sterile 0.85% NaCl may be drawn into the syringe prior to removal of the needle. **DO NOT TRANSPORT SYRINGES WITH NEEDLES ATTACHED AND/OR RECAPPED.** Attach syringe cap ONLY if necessary. The physician should use a protective device while removing the needle to avoid injury and should cap the syringe with a sterile cap prior to transporting it to the laboratory.

- Any Microbiology and Virology specimens collected in formalin are **UNACCEPTABLE** for culture.

722. Koch's postulate is fulfilled by all except

a) M.tuberculosis

b) E.coli

c) T. pallidum

d) None

Correct Answer - C

Ans. is 'c' i.e., T. pallidum

Koch postulates

- Robert Koch proposed a series of postulates that have been applied broadly to link many specific bacterial species with particular disease.
- Koch's postulates are :
 1. The microorganism should be found in all cases of the disease in question and its distribution in the body should be in accordance with the lesions observed.
 2. The microorganism should be grown in pure culture in vitro (or outside the body of the host) for several generations.
 3. When such a pure culture is inoculated into susceptible animal species, the typical disease must result.
 4. The microorganism must again be isolated from the lesions of such experimentally produced disease.
- Microorganisms that do not meet the criteria of Koch's postulates
 1. Mycobacterium leprae (leprosy) → Can not be cultured in vitro
 2. Treponema pallidum (syphilis) → Neisseria gonorrhoeae
 3. No animal model for experimental infection
- Microorganism that partially satisfy the postulates
- E. coli induced diarrhea

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723. All are sporicidal agents except ?

a) Formaldehyde

b) Glutaraldehyde

c) Ethylene oxide

d) Isopropyl alcohol

Correct Answer - D

Ans. is 'd' i.e., Isopropyl alcohol

Sporicidal agents

- Bacterial spores constitute some of the most resistant forms of life.
- By nature bacterial spores are resistant to extreme physical, chemical and thermal conditions and are second only to prions in their resistance to disinfection.
- They are resistant to most of the disinfectants.
- Only a few agents are effective against them.
- Sporicidal agents are -
 - Glutaraldehyde
 - Formaldehyde
 - Halogens
 - .. Iodine compounds -, Iodine, Iodophors
 - .. Chlorine compounds → Sodium hypochlorite, chlorine tablets
 - Ethylene oxide
 - Peroxygens → hydrogen peroxide, peracetic acid.
 - Beta propiolactone
 - Ozone
- Following compounds are usually sporostatic, but may become sporicidal at higher temperature?
 - Phenols
 - Cresols

- Organomercury compounds (Sodium thioglycolate)
- Chlorhexidine (Hibitane)

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724. Spores of bacteria are destroyed by

a) Alcohol

b) Lysol

c) Halogen

d) Ionizing radiation

Correct Answer - C

Ans. is 'c' i.e., Halogen

- Amongst the given options, only halogens have sporicidal property

725. All of the sterilization methods are properly matched except ?

a) Catgut suture - Radiation

b) Culture media - Autoclaving

c) Bronchoscope - Autoclaving

d) Glassware & syringes - Hot air oven

Correct Answer - C

Ans. is 'c' i.e., Bronchoscope - Autoclaving

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726. Percentage of glutaraldehyde used ?

a) 1%

b) 2%

c) 3%

d) 4%

Correct Answer - B

Ans. is 'b' i.e., 2%

- 2% Glutaraldehyde (cidex) is an aldehyde disinfectant with a broad spectrum of action against bacteria, fungi, viruses, as well as spores (slow action).

727. Glass vessels and syringes are best sterilised by -

- a) Hot air oven
- b) Autoclaving
- c) Irradiation
- d) Ethylene dioxide

Correct Answer - A

Ans. is 'a' i.e., Hot air oven

Hot air oven

- Hot air oven are electrical devices used in sterilization.
- The oven uses *dry heat* to sterilize articles.

Hot air oven is used for

- Glass ware
- Swabs
- Liquid paraffin
- Fat and grease
- All glass syringe
- Forceps, scissors, scalpels
- Dusting powder

728. Which of the following is an intermediate level disinfectant ?

a) 2% glutaraldehyde

b) Ethylene oxide

c) Hypochlorite

d) None

Correct Answer - C

Ans. is 'c' i.e., Hypochlorite

Levels of disinfections

Levels of disinfection	Items	Time	disinfectant
High level	Critical and semi critical items (except thermometers and hydrotherapy tanks)	≥ 20 min. (sterilization X, then HLD)	Glutaraldehyde, Hydrogen peroxide, peracetic acid, peracetic acid with hydrogen peroxide, chlorines
Intermediate level	Semicritical and noncritical (except environmental surfaces)	≤ 10 min.	Alcohols, Iodophors, Phenolics, chlorines
Low level (environmental surfaces)	Noncritical		Alcohols, Iodophors, Phenolics, chlorines

729. Lactose fermentation is seen in ?

- a) Blood agar
- b) Chocolate agar
- c) MacConkey agar
- d) LJ medium

Correct Answer - C

Ans. is 'c' i.e., MacConkey agar

- Culture on differential media that contain special dyes and carbohydrates distinguishes lactose-fermenting (colored) from non-lactose-fermenting (non-pigmented) colonies and may allow rapid presumptive identification of enteric bacteria.
- Such media, used to see lactose fermentation, are :?
 1. Eosine-methylene blue (EMB)
 2. MacConkey's agar
 3. Deoxycholate agar

730. In blood culture the ratio of blood to reagent is ?

a) 1:5

b) 1:20

c) 1:10

d) 1:100

Correct Answer - C
Ans. is 'c' i.e., 1:10

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731. Which anticoagulant is used when blood is sent for blood culture ?

a) Sodium citrate

b) EDTA

c) Oxalate

d) SPS

Correct Answer - D

Ans. is 'd' i.e., SPS

Many different types of bacteria and fungi have been identified as causative agents of septicemia.

For this reason, many diverse culture media formulations are available in prepared blood culture bottles.

Majority of these media contain 0.03% SPS (Sodium polyanethal sulfonate), a polyanionic anticoagulant, which additionally inhibits complement and lysozyme activity, interferes with phagocytosis and inactivates aminoglycosides.

Following important blood culture bottles are there :-

- i) Brain heart infusion (BHI) with PABA (para-aminobenzoic acid)
- ii) Brucella broth with 6% sorbitol
- iii) Brucella broth with 10% sucrose
- iv) Columbia broth
- v) Thioglycolate medium
- vi) Tryptic soy broth

732. All are true regarding resistance of penicillin in staphylococcus aureus, except ?

- a) Penicillinase production is transmitted by transduction
- b) Methicillin resistance is due to change in PBP
- c) Hospital strains mostly produce type D penicillinase
- d) Penicillinase production is plasmid mediated

Correct Answer - C

Ans. is 'c' i.e., Hospital strains mostly produce type D penicillinase
Resistance to antibiotics

- a Penicillin resistance is of three types?
 1. Production of beta-lactamase (penicillinase)
- It inactivates penicillin by splitting beta-lactam ring
- Its production is controlled by plasmid.
- Plasmid is transmitted by transduction (mainly) or conjugation.
- Penicillinase is an inducible enzyme
- As a result of the widespread dissemination of plasmids containing penicillinase, less than 5% strains of staph. remain susceptible to penicillin.
- Staphylococci produce four types of penicillinases, A to D. Hospital strains usually form type 'A' penicillinase.
 2. Changes in bacterial surface receptors by lack or inaccessibility of certain penicillin-binding proteins (PBPs) in the organism.
- Methicillin-resistant is mainly due to this mechanism and is independent of beta-lactamase production.
- It is due to the production of PBP 2a.
- This change (in bacterial surface receptors) is normally

chromosomal.

- The resistance gene is mec A gene which is a part of a large mobile genetic element - staphylococcal cassette chromosome (SCCmec).
 - This genetic material has been transferred to Staph. aureus from S. seiuri.
3. Development of tolerance to penicillin, by which the bacterium is only inhibited but not killed

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733. Arrangement of lens from eye to source of light, in light microscope ?

a) Ocular lens : Subjective lens : Condensor lens

b) Subjective lens : Ocular lens : Condensor len

c) Condensor lens : Subjective lens : Ocular lens

d) Subjective lens : Condensor lens : Ocular lens

Correct Answer - A

Ans. is 'a' i.e., Ocular lens : Subjective lens : Condensor lens

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734. Phage typing can be done for -

a) Salmonella

b) Streptococcus

c) Shigella

d) Pseudomonas

Correct Answer - A

Ans. is 'a' i.e., Salmonella

- **Phage typing** is a method used for detecting single strains of bacteria.
- It is used to trace the source of outbreaks of infections. The viruses that infect bacteria are called bacteriophages ("**phages**" for short) and some of these can only infect a single strain of bacteria.
- **Phage typing** provides a rapid, accurate, and cheap method of investigating **Salmonella** strains for epidemiological use. **Salmonella** strains within a particular serovar may be differentiated into a number of **phage** types by their pattern of susceptibility to lysis by a set of **phages** with different specificity. Phage typing is done for

- 1. Salmonella
- 2. V. cholerae

- 3. Staph aureus
- 4. Bacillus anthracis

735. Swarming growth on culture is characteristic of which Gram positive organism ?

a) Clostridium welchi

b) Clostridium tetani

c) Bacillus cereus

d) Proteus mirabilis

Correct Answer - B

Ans. is 'b' i.e., Clostridium tetani

Swarming growth

- Swarming growth is due to the motility of bacteria. In young culture, discrete colonies are seen but thereafter actively motile cells spread on the surface of the plate in successive waves to form a thin filmy layer in concentric circles.
- Gram-positive organism showing swarming growth → C. tetani and Bacillus cereus
- Gram-negative organism showing swarming growth → Proteus mirabilis and Proteus vulgaris

736. Which of the following is called as Preisz-Nocard bacillus -

a) *C. diphtheriae*

b) *C. pseudotuberculosis*

c) *M. tuberculosis*

d) *Mycoplasma*

Correct Answer - B

Ans. is 'b' i.e., *C. pseudotuberculosis*

Bacteria and their alternate names

• <i>Bordetella</i>	• <i>Bordet Gengou bacillus</i>
• <i>Clostridium tetani</i>	• <i>Nicolaire's bacillus</i>
• <i>Corynebacterium diphtheriae</i>	• <i>Klebs-Loeffler 's bacillus</i>
• <i>Corynebacterium pseudotuberculosis</i>	• <i>Preisz-Nocard bacillus</i>
• <i>Haemophilus aegyptius</i>	• <i>Koch-Weeks bacillus</i>
• <i>Haemophilus influenzae</i>	• <i>Pfeiffer 's bacillus</i>
• <i>Klebsiella pneumoniae</i>	• <i>Friedlander's bacillus</i>
• <i>Klebsiella ozaenae</i>	• <i>Abel's bacillus</i>
• <i>Klebsiella Rhinoscleromatis</i>	• <i>Frisch 's bacillus</i>
• <i>Mycobacterium tuberculosis</i>	• <i>Koch's bacillus</i>
• <i>Mycobacterium intracellulare</i>	• <i>Bathey's bacillus</i>
• <i>Mycobacterium paratuberculosis</i>	• <i>Johne's bacillus</i>
• <i>Mycoplasma</i>	• <i>Eaton agent</i>
• <i>Pseudomonas pseudomallei</i>	• <i>Whitmore's bacillus</i>

**737. Darting motility which occur in
V.cholerae, also found in -**

a) Shigella

b) Campylobacter jejuni

c) Pneumococcus

d) Bacillus anthrax

Correct Answer - B

Ans. is 'b' i.e., Campylobacter jejuni

Darting (shooting star) motility is seen in

- V. Cholerae
- Gardnerella vaginalis
- *Campylobactor*

738. Patient came from Nagaland and shows positive test with OXK antigen. Diagnosis is?

a) Trench fever

b) Scrub typhus

c) Endemic typhus

d) Epidemic typhus

Correct Answer - B

Ans. is 'b' i.e., Scrub typhus

Weil Felix reaction (Detect OXK antibodies)

. This reaction is an agglutination test in which sera are tested for agglutinins to O antigens of certain non-motile proteus strains OX - 19, OX - 2 and OX - K.

- The basis of the test is the sharing of an alkali - stable carbohydrate antigen by some rickettsiae and by certain strains of proteus, *P. vulgaris* OX - 19 and OX - 2 and *P. mirabilis* OX - K.
- The test is usually done as a tube agglutination, though rapid slide agglutination methods have been employed for screening.

Weil Felix Reaction

Disease	OX-19	OX-2	OX-K
Rocky Mountain spotted fever	+	+	?
Rickettsial pox	-	-	?
Epidemic typhus	+	-	-
Brill - Zinsser disease	+/-	-	?

Scrub typhus	-	-	+
Endemic typhus	+	-	?
Trench fever		-	?
Q fever		-	

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739. Which of the following stimulate adenylate cyclase with G-protein coupled action ?

a) Shiga toxin

b) Cholera toxin

c) Diphtheria toxin

d) Pseudomonas toxin

Correct Answer - B
Ans. is 'b' i.e., Cholera toxin

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740. Most common staphylococcal phage strain causing hospital infection ?

a) 80/81

b) 79/80

c) 3A/3C

d) 69/70

Correct Answer - A

Ans. is 'a' i.e., 80/81

Hospital strains of staphylococcus aureus

- Certain strains of staphylococcus are the common cause of post-operative wound infections and other infections in the hospital environment.
- These strains are known as **hospital strains**.
- The hospital strains show the following characteristics:
 1. They are resistant to penicillin, methicillin and other routinely used antibiotics.
 2. They belong to certain bacteriophage types.
 3. Some of the strains (eg phage type 80/81) are known to cause hospital infections throughout the world. Such strains are called as epidemic strains.

741. Most common organism causing URTI in adult?

a) H influenza

b) Stap aureus

c) Strepto pneumonia

d) Streptococcus pyogenes

Correct Answer - D

Ans. is 'd' i.e., Streptococcus pyogenes

- Most common cause of upper respiratory tract infection is viral infection. Rhinovirus is the most common cause.
- Among the bacteria, group A beta-hemolytic streptococci (streptococcus pyogenes) is the most common cause.
- And most common type of infection is pharyngitis.

742. Draughtsman (Concentric Rings) on culture are produced by ?

a) *Yersinia pestis*

b) *H. ducreyi*

c) *B. pertusi*

d) Pneumococi

Correct Answer - D

Ans. is 'd' i.e., Pneumococci

- Due to alpha hemolysis, colonies of pneumococci resemble colonies of *Str. viridans*.
- But on further incubation, the colonies of pneumococci become flat with raised edges and central umbonation, so that concentric rings are seen on the surface when viewed from above --> draughtsman or Carrom coin appearance.

743. The vaccine against N-meningitidis contains ?

- a) Whole bacteria
- b) Capsular polysaccharide
- c) Somatic 'O' antigen
- d) None of these

Correct Answer - B

Ans. is 'b' i.e., Capsular polysaccharide
Meningococcal vaccine

- **Meningococcal vaccine** refers to any of the vaccines used to prevent infection by *Neisseria meningitidis*.
- Different versions are effective against some or all of the following types of meningococcus: A, B, C, W-135, and Y
- Effective vaccines prepared from purified Group A, Group C, Group Y, and or Group W - 135 meningococcal capsular polysaccharides. The immunity is group-specific.
- Meningococcal vaccines containing unconjugated purified capsular polysaccharides (A, C, Y and W) have been available since the 1970s and are still used to immunise travellers and at-risk individuals.
- Vaccines can be formulated as bivalent (groups A and C) or tetravalent (groups A, C, Y, and W135).
- The vaccines induce good immunity after a single dose in older children and adults but are of a little value in children below 3 years.
- It takes 10-14 days for immunity to develop.
- There is no Group B vaccine available at present.

744. Vaccine is available against which type of meningococcus ?

a) Type A

b) Type B

c) Type A and C

d) Type B and D

Correct Answer - C

Ans. is 'c' i.e., Type A and C

- Vaccine is available against type A, type C, type Y and type W - 135 meningococci.

745. Most common genetic play in Neisseria infection is

a) Male gender

b) HLA b27

c) Complement deficiency

d) IgA deficiency

Correct Answer - C

Ans. is 'c' i.e., Complement deficiency

- It is an essential component of the innate immune defence against infection by Neisseria (N. meningitides and N. gonorrhoea).
 - People who lack or have a deficiency in complement-mediated bactericidal activity are most susceptible to Neisseria diseases.
 - Terminal complement component (C5 through C9) deficiencies and deficiencies of the alternative pathway (Properdin, C3, Factor D) have a strong effect on susceptibility to, as well as the severity of, neisserial infections.
1. Deficiency of terminal complement (C₅ - C₉) component:- Deficiency of one of the terminal components that compose membrane attack complex (MAC) predisposes patients to infection with Neisseria meningitides or Neisseria gonorrhoeae. However, N. meningitides infection is more common.
2. Deficiencies of the terminal pathway:- Deficiencies in components of the alternative pathway, namely properdin, C3 and factor D, have been associated with increased susceptibility, almost exclusively, to meningococcal infection (amongst Neisseria).

746. Pneumococcal vaccine is prepared from ?

- a) Cell surface antigen
- b) Capsular polysaccharide
- c) From exotoxin
- d) From M protein

Correct Answer - B

Ans. is 'b' i.e., Capsular polysaccharide

There are two types of pneumococcal vaccines available : -

1. Polyvalent (23 types) polysaccharide vaccine

- This polysaccharide vaccine represents the capsular antigen of 23 most prevalent serotypes.
- It gives 80-90 % protection which is long-lasting (5 years).
- It is not meant for general use, but only in persons at enhanced risk of pneumococcal infection such as those with absent or dysfunctional spleen; sickle cell disease, coeliac disease; Chronic liver or renal or lung or cardiac disease, DM, CSF leaks (meningeal disruption: dural tear) and; immunodeficiency including HIV infection.
- It is not recommended in children under two years of age and those with lymphoreticular malignancies and immunosuppressive therapy.

2. Conjugate Vaccine

- A different pneumococcal vaccine containing pneumococcal polysaccharide coupled (conjugated) to a carrier protein (diphtheria toxoid) has been developed.
- The vaccine contains the capsular polysaccharide of seven most common pneumococcal serotypes,
- It can be given to children under the age of 2 years (but more than 6 weeks old).

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747. Most common cause of HUS in children is

a) E coli 0157/H7

b) S typhi

c) Shigella

d) None

Correct Answer - A

Ans. is 'a' i.e., E Coli 0157/H7

- The majority of HUS in children (90%) is related to prototypic diarrhoea associated form, predominately in previously healthy children 6 months to 4 years of age with a peak between 1 and 2 years.
- Shiga toxin-producing E .coli (STEC) is the major cause of diarrhoea associated with HUS.
- Specifically, E coli with serotype 0157:H7 is the bacteria most commonly associated with HUS (90%) and is the most virulent.
Other common bacteria implicated in the causation of HUS are :
- Shigella dysenteriae
- Salmonella typhi
- Campylobacter jejuni
- Yersinia species
- Pseudomonas species
- Clostridium difficile

748. TRUE about corynebacterium diphtheriae are all, EXCEPT:

- a) Has metachromatic granules
- b) Does not invade deeper tissues
- c) Toxigenicity demonstrated by Elek's test
- d) Toxin mediated by chromosomal gene

Correct Answer - D

Corynebacteria are 0.5–1 μ m in diameter and several micrometers long.

Characteristically, they possess irregular swellings at one end that give them the "**club-shaped**" appearance.

Irregularly distributed within the rod (often near the poles) are granules staining deeply with aniline dyes (**metachromatic granules**) that give the rod a beaded appearance.

Diphtheria toxin is absorbed into the mucous membranes and causes destruction of epithelium and a superficial inflammatory response.

If disulfide bonds are broken, the molecule can be split into two fragments.

Fragment B (MW=38,000), which has no independent activity, is functionally divided into a receptor domain and a translocation domain.

Acidification of the translocation domain within a developing endosome leads to creation of a protein channel that facilitates movement of Fragment A into the host cell cytoplasm.

Toxin fragment A inactivates EF-2 by catalyzing a reaction that yields free nicotinamide plus an inactive adenosine diphosphate-

ribose-EF-2 complex (ADP-ribosylation).

It is assumed that the abrupt arrest of protein synthesis is responsible for the necrotizing and neurotoxic effects of diphtheria toxin.

The toxigenicity of the corynebacterium diphtheriae is demonstrated by Elek test.

Ref: Brooks G.F., Carroll K.C., Butel J.S., Morse S.A., Mietzneron T.A. (2010). Chapter 12. Aerobic Nonsore-Forming Gram-Positive Bacilli: Corynebacterium, Listeria, Erysipelothrix, Actinomycetes, & Related Pathogens. In G.F. Brooks, K.C. Carroll, J.S. Butel, S.A. Morse, T.A. Mietzneron (Eds), Jawetz, Melnick, & Adelberg's Medical Microbiology, 25e.

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749. Daisy head colonies are seen with -

- a) Staph. Aureus
- b) Corynebacterium diphtheriae
- c) Staph. Pyogenes
- d) Anthrax

Correct Answer - B

Ans. is 'b' i.e., Corynebacterium Diphtheriae

- Four subspecies are recognized: *C. d. mitis*, *C. d. intermedius*, *C. d. gravis*, and *C. d. belfanti*.
- C.d.Gravis Colony on Tellurite Blood Agar is having $\geq 2\text{mm}$, dull greyish black, opaque colonies, daisy head, brittle, like cold margarine.
- Special stains like Albert's stain and Ponder's stain are used to demonstrate the metachromatic granules formed in the polar regions. The granules are called polar granules, Babes Ernst granules, volutin etc
- **daisy-head colony**. a round grey or black **colony** with a narrow translucent scalloped border, typically produced by Corynebacterium diphtheriae on tellurite blood agar.

750. Waterhouse-Friderichsen syndrome is seen in ?

a) Pneumococci

b) N. meningitidis

c) Pseudomonas

d) Yersinia

Correct Answer - B

Ans. is 'b' i.e., N. meningitidis

Waterhouse–Friderichsen syndrome (WFS) is defined as adrenal gland failure due to **bleeding** into the **adrenal glands**, commonly caused by a severe bacterial **infection**. Typically, it is caused by **Neisseria meningitides**. The bacterial **infection** leads to massive **bleeding** into one or (usually) both **adrenal glands**.

- Fulminant meningococcemia (purpura fulminans or Waterhouse - Friderichsen syndrome) is the most rapidly lethal form of septic shock experienced by humans.
- It differs from most other forms of septic shock by the prominence of hemorrhagic skin lesions (petechiae, purpura) and the consistent development of DIC.

751. Tuberculin test is positive if induration is ?

a) >2min

b) >5mm

c) >7mm

d) >10mm

Correct Answer - D

Ans. is 'd' i.e., > 10mm

- The tuberculosis skin test is another name for the tuberculin test or PPD test.
- The PPD test determines if someone has developed an immune response to the bacterium that causes tuberculosis (TB)
- A **tuberculin** reaction is classified as **positive** based on the diameter **of** the **induration** in conjunction with certain patient-specific risk factors.
- In a healthy person whose immune system is normal, **induration** greater than or equal to 15 mm is considered a **positive** skin test.

Procedure

- The standard recommended tuberculin test is the Mantoux test, which is administered by injecting a 0.1 mL of liquid containing 5 TU (tuberculin units) PPD (purified protein derivative) into the top layers of skin of the forearm.
- Doctors should read skin tests 48-72 hours after the injection.
- The basis of the reading of the skin test is the presence or absence and the amount of induration (localized swelling).
- A negative test does not always mean that a person is free of tuberculosis.

- A person who received a BCG vaccine (administered in some countries but not the U.S.) against tuberculosis may also have a positive skin reaction to the TB test.

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752. Glomerulonephritis in streptococcal infection is diagnosed by -

a) Blood culture

b) Throat culture

c) ASO Titre

d) PCR

Correct Answer - C

Ans. is 'c' i.e., ASO Titre

- In rheumatic fever and glomerulonephritis, retrospective diagnosis of streptococcal infection may be established by demonstrating high levels of antibodies to streptococcal toxins.
- The usual test done is antistreptolysin O titration.
- ASO titres higher than 200 units are considered significant and suggests either recent or recurrent infection with streptococci.
- ASO titres > 200 units do not mean rheumatic fever, it only indicates recent or recurrent infection.

753. Milk ring test is done to detect which organism present in milk?

a) Bordetella

b) Brucellosis

c) Bartonella

d) Salmonella

Correct Answer - B

correct answer- B--> Brucellosis

- For the detection of Brucella in infected animals, pooled milk samples may be tested for bacilli by culture and for antibodies by several techniques.
- In the milk ring test, a sample of whole milk is mixed well with a drop of stained brucella antigen and incubated in a water bath at 70 degrees for 40-50 min.
- If antibodies are present in the milk, the bacilli are agglutinated and rise with the cream to form a blue ring at the top, leaving the milk unstained.
- If antibodies are absent, no colour ring is formed and the milk remains uniformly blue.

Also Know:

- Bordetella is detected using the cough plate method, post nasal swab, and the pernasal swab method.
- Bartonella bacilliformis causes Oroya fever.
- Bartonella quintana causes trench fever.
- Bartonella henselae causes cat scratch disease.
- Salmonella is detected using a widal reaction.

754. Which of the following has only 1 serotype -

a) *C psittaci*

b) *C pneumoniae*

c) *C trachomatis*

d) None

Correct Answer - B

Ans. is 'b' i.e., *C pneumoniae*

There are many serovars of chlamydiae :

C. trachomatis TRIC —p. 12 serotypes } Total 15

C. trachomatis LGV 3 serotypes

C. psittaci — Many serotypes

C. pneumoniae —10. Only one serotype

755. Inclusion body containing glycogen is seen in ?

a) Chlamydia trachomatis

b) Chlamydia pneumoniae

c) Chlamydia psittaci

d) All of the above

Correct Answer - A

Ans. is 'a' i.e., Chlamydia trachomatis

Characteristics of the chlamydia

	C trachomatis	C pneumoniae	C psittaci
Inclusion morphology	Round, vacuolar	Round, dense	Large, variable shape, dense
Glycogen in inclusions	Yes	No	No
Elementary body morphology	Round	Pear-shaped, round	Round
Susceptible to sulfonamides	Yes	No	No
DNA homology to C pneumoniae	< 10%	100%	< 10%
Plasmid	Yes	No	Yes
Serovars	15	1	> 4
Natural host	Humans	Humans	Birds
Mode of transmission	Person to person, mother to infant	Airborne person to person	Airborne bird excreta to humans

Major diseases	Trachoma, STDs, infant pneumonia, lymphogran- uloma venereum	Pneumonia, bronchitis, pharyngitis, sinusitis	Psittacosis, pneumonia, fever of unexplained origin

756. Boutonneuse fever is caused by -

a) Rickettsia japonica

b) Rickettsia conorii

c) Rickettsia sibirica

d) Rickettsia australis

Correct Answer - B

Ans. is 'b' i.e., Rickettsia conorii

Tick borne fevers caused by Rickettsia

Organism	Fever caused
R. conorii	<i>Mediterranean spotted fever (boutonneuse fever)</i> Kenya tick typhus <i>Indian tick typhus</i> South African tick typhus Israeli spotted fever Astrakhan spotted fever
R. rickettsii	Rocky mountain spotted fever
R. Afircae	African tick-bite fever (A similar disease is caused by R. parker in US and A. trisite in South America)
R. japonica	Japanese spotted fever (oriental spotted fever) (similar disease in North Asia is caused by R. sibirica and R. heilongjiangensis)
R. honei	Flinders Island spotted fever
R. australis	Queensland tick typhus

757. The "String of pearl" colonies on Nutrient agar is produced by -

a) Klebsiella

b) Proteus

c) Bacillus

d) Salmonella

Correct Answer - C

Ans. is 'c' i.e., Bacillus

String of pearl reaction

- String of pearl reaction is used to differentiate *B. anthracis* from *B. cereus* and other aerobic spore-forming bacteria.
- When *B. anthracis* is grown on a solid medium containing penicillin, the cells become larger, spherical and occur in chains on the surface of the agar, resembling a string of pearls.

758. Saccharolytic species of clostridia ?

a) C. tetani

b) Cl. cochlearum

c) Cl. septicum

d) None

Correct Answer - C

Ans. is 'c' i.e., Cl. septicum

- Clostridia may break down carbohydrate for energy (saccharolytic) or break down protein for energy (Proteolytic) or both. Different clostridia have a different pattern:-
 - A) Both proteolytic and saccharolytic
- Pre-dominating proteolytic- **Cl. sporogenes, Cl. botulinum A.B.F., Cl. bifermentans, Cl. histolyticum.**
- Pre-Dominating Saccharolytic - **Cl. perfringens, Cl. novyi, Cl. septicum, Cl. difficile.**
 - B) Only proteolytic (not saccharolytic) - **Cl. tetani**
 - C) Only Saccharolytic (not proteolytic) - **Cl. botulinum C.D.E.**
 - D) Neither proteolytic nor saccharolytic - **Cl. cochlear**

759. Staining method used for mycoplasma ?

a) Fontona method

b) Laviditti method

c) Dienes method

d) None

Correct Answer - C

Ans. is 'c' i.e., Dienes method

- Colonies of mycoplasma may be seen with a hand lens but are best studied after staining by Dienes method.
- For this, a block of agar containing the colony is cut and placed on a slide.
- It is covered with a cover slip on which an alcoholic solution of methylene blue and azure has been dried

760. Thumb print appearance in culture film smear is seen -

a) *Bacillus anthracis*

b) *Brucella*, species

c) *Bordetella pertussis*

d) *Clostridium Welchii*

Correct Answer - C

Ans. is 'c' i.e., *Bordetella pertussis*

- In culture smears, the bacilli are arranged in loose clumps with clear spaces in between giving a thumbprint appearance.

Culture Characteristics of *Bordetella*

- Incorporation of diamine fluoride and penicillin (Lacey's DFP medium) makes it more selective.
- It produces bisected pearl or mercury drops colonies.
- Confluent growth is present with "aluminium paint" appearance.
- In culture smears the bacilli are arranged in loose clumps with clear spaces in between giving a thumbprint appearance.
- Transport media used are modified by Stuart's medium and Mischulo's charcoal agar.

761. All are non-sporing anaerobes of medical importance except

a) Actinomyces

b) Bacteroides

c) Clostridia

d) Fusobacterium

Correct Answer - C
Ans. is 'c' i.e., Clostridia

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762. Causative agent for melioidosis is ?

a) *Pseudomonas pseudomallei*

b) *Pseudomonas aeruginosa*

c) *Pseudomonas cepacia*

d) *Pseudomonas mallei*

Correct Answer - A

Ans. is 'a' i.e., *Pseudomonas pseudomallei*

- *Burkholderia pseudomallei* is a recognized biothreat agent and the causative agent of melioidosis. This Gram-negative bacterium exists as a soil saprophyte in melioidosis-endemic areas of the world and accounts for 20% of community-acquired septicaemia in northeastern Thailand where half of those affected die.
- Melioidosis can be contracted via cutaneous inoculation, inhalation, or ingestion, and can present with extremely varied symptoms, these vague symptoms and diverse clinical presentations, along with culture-based diagnostic anomalies, make it difficult to properly diagnose in clinical settings. No vaccines against *B. pseudomallei* are currently available, making rapid detection and specific antibiotic treatment crucial for favorable outcomes in infected humans

763. JSB stain is used for which parasite ?

a) Malaria

b) Filaria

c) Kala azar

d) Sleeping sickness

Correct Answer - A

Ans. is 'a' i.e., Malaria

- JSB (Jaswant-Singh-Bhattacharji) stain is a fairly rapid staining method for the detection of malarial parasites.
 - This stain is superior to the field's stain because the parasites stain clearer and *both thick and thin smears can be stained*.
 - However, preparations fade quite rapidly and this stain is, therefore, not recommended when permanent slides are desired.
- Stains used for staining malarial smears
- A number of Romanowsky stains are used for example *Field's*, *Giemsa's*, *Wright's* and *Leishman's*.
 - For thick smear, the stains used are : (i) *Field's* or (ii) *Giemsa's*.
 - For thin smear, the stains used are (i) *Giemsa's* or (ii) *Leishman's*.
 - JSB stain is used for both thick and thin smears, and is the standard method used by laboratories under the National Malaria Eradication Programme in India.

764. Which of the following amoebae does not have neuropathogenic effect ?

a) Naegleria

b) Acanthamoeba

c) Dientamoeba

d) Bala muthia

Correct Answer - C

Ans. is 'c' i.e., Dientamoeba

Neuropathogenic amoebae are

- Naegleria Fowleri Causes primary amebic meningoencephalitis.
- Acanthamoeba causes granulomatous amebic encephalitis
- Balamuthia mandrillaris causes amebic meningoencephalitis.

765. Culture medium used for entamoeba histolytica?

- a) Blood agar
- b) Philip's medium
- c) CLED medium
- d) Trypticase serum

Correct Answer - B

Ans. is 'b' i.e., Philip's medium

Cultures media used for cultivation of *E. histolytica* are :-

1. Boeck and Drbohlav's medium
2. Philip's medium
3. Shaffer and Frye's medium
4. Jones medium
5. Balamuth's medium
6. Diamond's medium

766. All are true about Helminths, except?

a) Alimentary canal is complete in Nematodes

b) Body cavity is present in trematodes

c) Nematodes have separate sexes

d) Alimentary canal is Present but incomplete

Correct Answer - B

Ans. is' i.e., B- Body cavity is present in trematodes

Option b is incorrect → Body cavity is present in trematodes, It is Actually Absent.

Option d is correct--> alimentary canal is present in trematodes, it is incomplete with no anus.

• **Thus, option b is the best answer here.**

• Table showing the differences between Cestodes, Trematodes and Nematodes

	Cestode	Trematode	Nematode
<i>Shape</i>	Tape-like; segmented	Leaf-like; unsegmented	Elongated, cylindrical; unsegmented
<i>Sexes</i>	Not separate, i.e., hermaphrodite (monoecious)	Not separate (Monoecious), except Schistosomes which are diecious	Separate (diecious)
<i>"Head" End</i>	Suckers, often with hooks	Suckers, no hooks	No suckers, no hooks Well-developed buccal

			capsule in some species
<i>Alimentary canal</i>	Absent	Present but incomplete/ no anus	Present and complete anus present
<i>Body cavity</i>	Absent	Absent	Present

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767. The only ovoviviporous parasite ?

a) Ascaris

b) Strongyloides

c) Enterobius

d) Ancylostome

Correct Answer - B

Ans. is 'b' i.e., Strongyloides

- Strongyloides stercoralis is a human pathogenic parasitic roundworm causing the disease strongyloidiasis.
- Ovo-viviparous (lay eggs which hatch immediately)
- Strongyloides stercoralis, a ovo-viviparous intestinal nematode causes strongyloidiasis, which is manifested by skin rashes, eosinophilia, and abdominal abdominal pain.
- Infection usually usually results in asymptomatic chronic disease of the gut, which can remain undetected for decades.

768. Charcot Leyden crystal in stool is seen in:

a) Amoebic dysentery

b) bacillary dysentery

c) Shigella

d) bacillus cereus

Correct Answer - A

Ans. a. Amoebic dysentery

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769. Which of the following is not common in India ?

a) Japanese B encephalitis

b) Lassa fever

c) KFD

d) Dengue

Correct Answer - B

Ans. is 'b' i.e., Lassa fever

Some Arboviruses known to be prevalent in India

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770. Cylindrical helminths are -

a) Tapeworms

b) Flukes

c) Roundworms

d) Cestodes

Correct Answer - C

Ans. is 'c' i.e., Roundworms

Helminths (metazoa) are divided into ?

- 1. Nematelminthes: These are *cylindrical (round)*, therefore are called round-worms (nematodes).
 - 2. Platyhelminthes: These are *flat* and divided into :
 - *Cestodes (tapeworms)*: These are *segmented*
 - *Trematodes (flukes)*: These are leaf-like
- Cylindrical Helminths → Nematodes(round-worms)
Flat segmented helminths → Cestodes (tape-worms)
Flat, leaf-like helminths → Trematodes (flukes)

771. Consumption of uncooked pork is likely to cause which of the following helminthic disease -

a) *Taenia saginata*

b) *Taenia solium*

c) *Trichuris trichiura*

d) None of these

Correct Answer - B

Ans. is 'b' i.e., *Taenia solium*

Humans acquire intestinal tapeworm infection by ingesting undercooked pork containing cysticerci.

Mode of infection of tapeworms

1. *T. saginata* --> Under cooked beef contains cysticercus bovis.
2. *T solium* --> Undercooked pork containing cysticercus cellulosae & rarely by ingestion of egg (autoinfection.)
3. *Trichuris - trichiura* caused by ingestion of infective egg via faeco-oral route from contaminated soil.
4. Hydatid cyst is caused by ingestion of infectious egg via faeco-oral route from contaminated soil.

772. Eggs discharged in urine

a) *S. mansoni*

b) *S. japonicum*

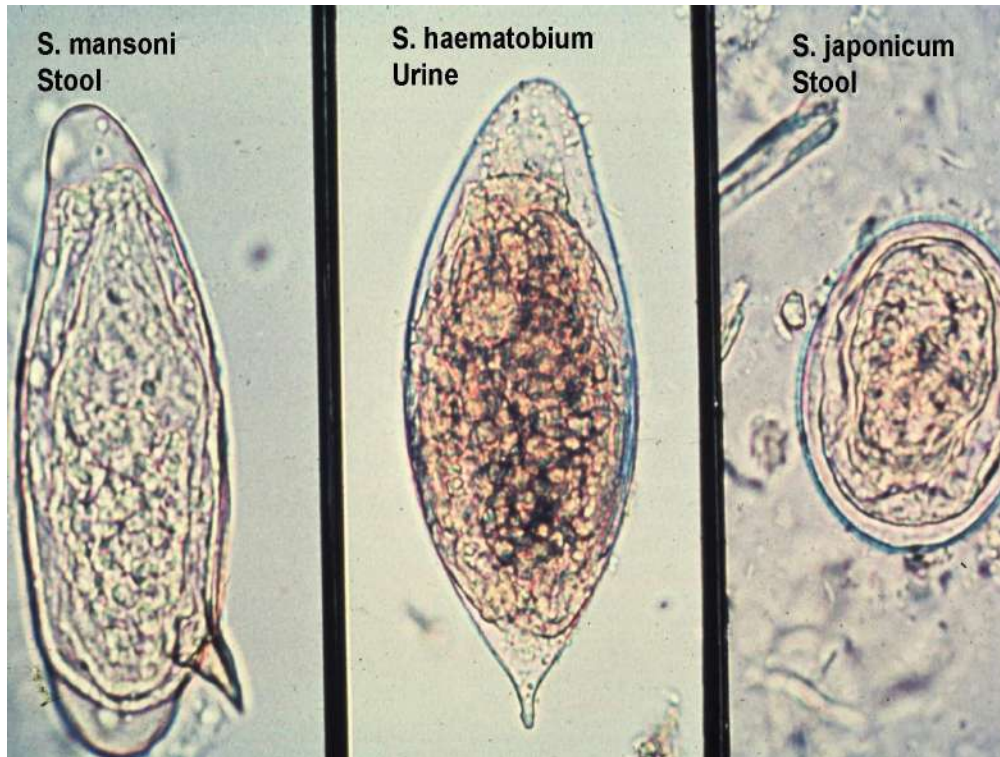
c) *S. haematobium*

d) All

Correct Answer - C

Ans. is 'c' i.e. *S. haematobium*

- 20 mm in length and 0.25 mm in breadth female.
- Elongated 110 -170 μ m long and 40-70 μ m wide eggs, Has a thin, smooth shell, a rounded anterior end and a characteristic terminal spine from the tapered posterior end
- Egg discharged in Urine, Infective form is Fork - tailed cercariae that penetrate skin of humans wading in freshwater canals.



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773. Most common site for hydatid cyst

a) Lung

b) Liver

c) Brain

d) Kidney

Correct Answer - B

Ans. is 'b' i.e., Liver [Ref Harrison 18th le p. 1762]

The majority of hydatid cysts occur in the liver,
Liver cysts occur more frequently in the right lobe.

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774. Child having perianal pruritus with following eggs is due to -

a) **E. vermicularis**

b) Ascaris

c) Ancylostoma duodenale

d) S stercoralis

Correct Answer - A

Ans. is 'a' i.e., E. vermicularis

Clinical features of thread worm Infections

- * Most pinworm infections are asymptomatic.
- * *Perianal pruritis is the cardinal symptom.* The itching, is worse at night and disturbs sleep.
- * Heavy infections can cause *abdominal pain* and weight loss.
- * Nocturnal enuresis
- * Vulvovaginitis
- * Pelvic and peritoneal granulomas rare
- * Appendicitis
- * Salpingitis

775. Infective form of *T. brucei* ?

a) Amastigote

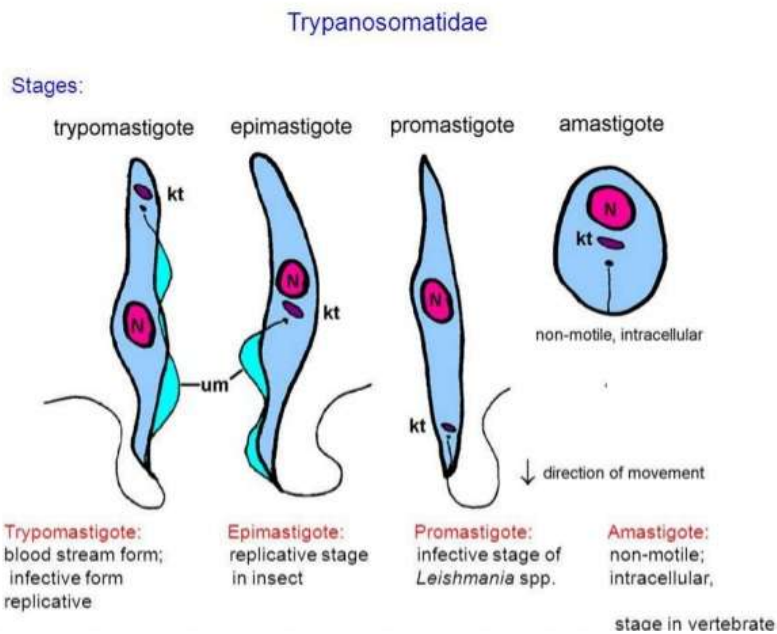
b) Trypomastigote

c) Egg

d) None

Correct Answer - B

Ans. is 'b' i.e., Trypomastigote



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776. Operculated eggs are seen in -

a) Nematodes

b) Cestodes

c) Trematodes

d) Protozoa

Correct Answer - C

Ans. is 'c' i.e., Trematodes

- Operculated eggs has a little cap like structure (operculum) at the end. The operculum pops open when the next stage is ready to emerge.
- The nematodes (flukes) lay operculated eggs. *An exception is schistosome egg, which are not operculated.*

777. Which form of the malarial parasite is present in saliva of an infective mosquito

-

a) Ring form

b) Schizont

c) Gametocyte

d) Sporozoite

Correct Answer - D

Ans. is 'd' i.e., Sporozoite

. Sporozoites are infective to man. Human infection begins when a female anopheline mosquito inoculates plasmodial *sporozoites* from its salivary gland during a blood meal.

778. In malaria, pre-erythrocytic schizogony occurs in -

a) Lung

b) Liver

c) Spleen

d) Kidney

Correct Answer - B
Ans. is 'b' i.e., Liver

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779. How many pairs of flagella does Giardia lamblia possess -

a) One

b) Two

c) Three

d) Four

Correct Answer - D

Ans. is 'd' i.e., Four

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780. A case of giardiasis presents with -

- a) Nausea and vomiting
- b) Abdominal pain
- c) Steatorrhea and flatulence
- d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Giardiasis

- * Disease manifestations of giardiasis range from asymptomatic carriage to fulminant diarrhea and *malabsorption*.
- * Most infected persons are asymptomatic
- * The mechanisms by which *Giardia* causes alteration in small bowel function are largely unknown. Although trophozoites adhere to the epithelium, *they do not cause invasive or locally destructive alterations*.
- * In most cases the morphology of the bowel is unaltered but in few cases; in chronically infected symptomatic patients; the histopathologic finding (flattened villi) and the clinical manifestations resemble those of tropical sprue and gluten sensitive enteropathy.
- Incubation period - 1 to 3 weeks
 - * Clinical manifestations
 - * Diarrhea
 - * Abdominal pain
 - * Bloating
 - * Extraintestinal - urticaria, anterior uveitis, arthritis.
 - * Nausea
 - * Vomiting
 - * Flatus
 - * *Fever, the presence of blood or mucus in the stools suggest a different diagnosis as all these are absent in giardiasis.*

781. A 4 year old child presents with acute watery diarrhea and abdominal cramps. Stool microscopy reveals trophozoites with falling leaf motility. The etiological agent is ?

a) Entamoeba histolytica

b) Giardia lamblia

c) Trichomonas tenax

d) Balantidium coli

Correct Answer - B

Ans. is 'b' i.e., Giardia lamblia

- In acute giardiasis trophozoites show the typical "falling-leaf" motility in wet mount examination of faeces. Diagnosis of giardiasis?
- The gold-standard for diagnosis of giardiasis is microscopic demonstration of trophozoite or cyst or both in faeces.
- In acute giardiasis trophozoites show the typical "falling-leaf" motility in wet mount examination of faeces.
- The characteristic shape and two nuclei are seen after staining a thin faecal smear with Field's stain.
- Trophozoites are also present in duodenal fluid. Duodenal fluid can be either aspirated or obtained by "String test" (Enterotest) for examination.
- Cysts of G. lamblia are often shed in the faeces in "Showers", meaning that many cysts may be passed on a day and none on the other. Hence, to detect cyst-passers multiple-sample are to be examined, preferably following concentration techniques like zinc

sulphate floatation or formal detergent concentration technique.

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782. The hookworm thrives on ?

a) Whole blood

b) Plasma

c) Serum

d) RBC

Correct Answer - B

Ans. is 'b' i.e., Plasma

Hook worms

Ancylostoma duodenale → Old world hookworm

Nector americanus → New world hook worm

Habitat → Small intestine (Jejunum > duodenum > Ileum)

Infective form → Filariform larva

Mode of infection → Penetration of skin

- Plasma forms the main source of nourishment for hookworm, the red blood cells pass out from the worm practically unchanged into the lumen of host's intestine.

783. Infective form of Hookworms ?

a) Egg

b) Rhabditiform larva

c) Filariform larva

d) None

Correct Answer - C

Filariform larva

- Eggs are passed in the stool, and under favorable conditions (moisture, warmth, shade), larvae hatch in 1 to 2 days.
- **The released rhabditiform larvae grow in the feces and/or the soil, and after 5 to 10 days (and two molts) they become filariform (third-stage) larvae that are infective .**

784. Cutaneous larva migrans is due to ?

a) Ankylostoma braziliensis

b) W.bancrofti

c) B. Malayi

d) D. medinensis

Correct Answer - A

Ans. is 'a' i.e., Ankylostoma braziliense

Larva migrans

. Certain nematode larvae on entering into unnatural host (e.g. man) may not be able to complete their journey through the host's tissues for localization in their normal abode.

. Two different types of conditions are produced.

.. Entering by skin penetration or creeping eruption	- Cutaneous larva migrans
?. Entering via oral route	- Visceral larva migrans.

785. Ascospore is ?

- a) Asexual spore
- b) Sexual spore
- c) Conidia
- d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Sexual spore

Fungal spores

- Most fungi reproduce through the generation of spores
- Fungi produce spores by two methods?
- Sexual reproduction → Sexual spores
- Asexual reproduction → Asexual spores

786. The fungus with septate hyphae and dichotomous branching is -

a) Aspergillus

b) Penicillium

c) Mucor

d) Rhizopus

Correct Answer - A

Ans. is 'a' i.e., Aspergillus

- Septate hyphae with dichotomous branching into two equal divisions at a regular angle of 45° are typical of Aspergillus.
- Mucor and rhizopus are non-septate (aseptate) and penicillium has no hyphae (It is yeast like fungus).

787. Acute angled septate hyphae are seen in ?

a) Aspergillus

b) Mucor

c) Penicillium

d) Candida

Correct Answer - A

Ans. is 'a' i.e., Aspergillus

- *Septate hyphae with acute branching is characteristic of aspergillus.*

788. Which is false about penicillium marneffi -

- a) Black colonies
- b) Dimorphic fungi
- c) Amphotericin B used for treatment
- d) Causes fulminant infections in immunocompromised patients

Correct Answer - A

Ans. is 'a' i.e., Black colonies

Penicillium marneffeii

- *Penicillium marneffeii* cause serious disseminated disease with characteristic papular skin lesion in AIDS Patients in South-East Asia.
- The fungus is *dimorphic*, forming yeast-like cells that are often intracellular, *resembling histoplasmosis*, in infected tissues.
- The yeast phase (37°C) displays colonies that are white to tan, soft and dry.
- The most distinguishing characteristic of mould phase (at 25° C) is the early presence of red pigment that diffuses into agar. The colonies start as pinkish-yellow and evolve into a bluish-green color in the center with a white periphery.
- It is associated with bamboo rat (*Rhizomys sinensis*) and has been isolated from their burrows and internal organs.
- Treatment is amphotericin B, followed by itraconazole to prevent relapse.

789. Color of granules in mycetoma caused by *Actinomadura pelletierii* :-

a) Black

b) Yellow

c) Red

d) Brown

Correct Answer - C

Ans. is 'c' i.e., Red

Colour of Grains in Mycetomas of Various Etiology

White to Yellow	Brown to Black	Red
1) <i>Nocardia asteroides</i>	1) <i>Madurella mycetomi</i>	1) <i>Actinomadura pelletierii</i>
2) <i>Nocardia brasiliensis</i>	2) <i>Madurella grisea</i>	
3) <i>Actinomadura madurae</i>	3) <i>Phialophora jeanselmei</i>	
4) <i>Streptomyces somaliensis</i>		
5) <i>Allescheria boydii</i>		

790. Aspergillus causes all except ?

a) Bronchopulmonary allergy

b) Otomycosis

c) Dermatophytosis

d) *Allergic sinusitis*

Correct Answer - C

Ans. is 'c' i.e., Dermatophytosis

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791. Valley fever or desert rheumatism is caused by ?

a) Sporothrix

b) Cladosporium

c) Phialophora

d) None

Correct Answer - D

Ans. is 'None'

Ans. is 'None'

Coccidioidomycosis, commonly known as **cocci**, **Valley fever**, as well as **California fever**, **desert rheumatism**, and **San Joaquin Valley fever**, is a mammalian fungal disease caused by *Coccidioides immitis* or *Coccidioides posadasii*.

The scientific name for **Valley fever** is “coccidioidomycosis,” and it's also sometimes called “San Joaquin **Valley fever**” or “**desert rheumatism**.”

The term “**Valley fever**” usually refers to *Coccidioides* infection in the lungs, but the infection can spread to other parts of the body in severe cases.

792. Tinea cruris is caused by -

a) Epidermophyton

b) Trichophyton

c) Microsporum

d) a and b

Correct Answer - D

Ans. is 'a' i.e., Epidermophyton; 'b' i.e., Trichophyton

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793. Most common type of HPV associated with cervical cancer ?

a) 6, 11

b) 5, 8

c) 16, 18

d) 6, 8

Correct Answer - C

Ans. is 'c' i.e., 16, 18

- HPV DNA of oncogenic types (High risk) in HPV-16, 18, 31, 33 and 45 → associated with cervical cancer
- HPV-6 and 11 (Low risk HPV) → associated with precursor lesions of cervical cancer (CIN) and Condyloma Acuminatum.
- In patients with epidermodysplasia verruciformis, Squamous cell cancer develop frequently at sites infected with specific HPV types, including 5 and 8.
- E6 and E7 genes of HPV are responsible for carcinogenicity.

794. Which of the following is false regarding dimorphic fungi -

- a) Occurs in two growth forms
- b) Can cause systemic infection
- c) Cryptococcus is an example
- d) Coccidioides is an example

Correct Answer - C

Ans. is 'c' i.e., Cryptococcus is an example

Dimorphic fungi

- Fungi that have *two growth forms*, such as *mold (filaments)* and a *yeast*, which develop under different growth conditions.
 - . *In host tissues or cultures at 37°C they occur as yeasts, while in the soil and in cultures at 22°C they appear as moulds.*
 - . Most fungi causing systemic infections are dimorphic fungi.
- Note - *Candida albicans* is a dimorphic fungus, while other species of *candida* are not dimorphic.

795. A plant prick can produce sporotrichosis. All are true statements about sporotrichosis except -

- a) Is a chronic mycotic disease that typically involves skin, subcutaneous tissue and regional lymphatics
- b) Most cases are acquired via cutaneous inoculation
- c) Enlarged lymph nodes extending centripetally as a beaded chain are a characteristic finding
- d) It is an occupational disease of butchers, doctors

Correct Answer - D

Ans. is 'd' i.e., It is an occupational disease of butchers, doctors

- * Sporotrichosis is caused by the thermally dimorphic fungus *sporothrix schenckii*.
- * Because *S.schenckii* naturally found in soil, hay, sphagnum moss, and plants, it usually affects farmers, *gardeners*, and agricultural workers.
- * This fungal disease *usually affects the skin* although rare forms can affect the lungs, joints, bones and CNS.
- * Fungus enters through *small cuts and abrasions* in the skin to cause the infection.
- * Because roses can spread the disease, it is one of a few diseases referred to as *rose-thorn or rose gardener's disease*. Forms and symptoms of sporotrichosis:
 - 1) *Cutaneous (skin) sporotrichosis*
 - * This is the *most common form* of this disease.
 - * Symptoms of this form includes nodular lesions or bumps in the skin, at the point of entry and *also along lymph nodes and vessels*.
 - * The lesion starts off as small and painless nodule and rashes in

The lesion starts off as small and painless, nodules and ranges in colour from pink to purple.

- * Left untreated, the lesion becomes larger and looks similar to a boil and more lesions will appear, until a chronic ulcer develops.

- * *Usually cutaneous sporotrichosis lesions occurs in the finger, hand and arm.*

2) Pulmonary sporotrichosis

- * This rare form of the disease occur when *S.schenckii* spores are *inhaled*.

- * Symptoms include productive cough, nodules, cavitations and fibrosis of lungs; and hilar lymph node enlargement.

- * Patients with this form of sporotrichosis are susceptible to developing tuberculosis and pneumonia.

3) Disseminated sporotrichosis

- * When the infection spreads from the primary site to secondary sites in the body, the disease develops into a rare and critical form called disseminated sporotrichosis.

- * The infection can spread to joints and bones (called osteoarticular sporotrichosis) as well as the CNS and brain (sporotrichosis meningitis).

796. False about viruses is ?

a) Ribosomes absent

b) Mitochondria absent

c) Motility absent

d) Nucleic acid absent

Correct Answer - D

Ans. is 'd' i.e., Nucleic acid absent

- Viruses contain nucleic acid, either RNA or DNA.

Properties of viruses

- Viruses are obligate intracellular parasites.
- They lack enzymes necessary for protein and nucleic acid synthesis and are dependent for replication on the synthetic machinery of host cells so, they cannot grow in cell free culture media.
- They do not have cellular organization.
- They are unaffected by antibacterial antibiotics.
- They contain only one type of nucleic acid, either RNA or DNA, never both.
- They multiply by a complex process and not by binary fission.
- The extracellular infectious virus particle is called the virion. o With few exceptions, viruses are very heat labile.

797. Which is not a DNA virus ?

a) Parvovirus

b) Papovavirus

c) Poxvirus

d) Rhabdovirus

Correct Answer - D
Ans. is 'd' i.e., Rhabdovirus

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798. Schedule of intradermal rabies vaccine is ?

a) 2-2-0-1-0-1

b) 8-0-4-0-1-1

c) 8-4-4-1-0-1

d) 2-0-2-0-0

Correct Answer - D

Ans. is 'd' i.e., 2-0-2-0-0

WHO-recommended and alternative pre-exposure prophylactic regimens

PrEP regimen	Duration of course	Number of injection sites per clinic visit (days 0, 3, 7, 14, 21–28)
WHO-recommended intradermal regimen		
Two visits	7 days	2-0-2-0-0
WHO-recommended intramuscular regimen		
Two visits	7 days	1-0-1-0-0
PrEP under specific circumstances		
Single visit, intradermal	1 day	2-0-0-0-0
Single visit, intramuscular	1 day	1-0-0-0-0

799. Site for injection of cell culture rabies vaccine-

a) Gluteus

b) Subcutaneous

c) Deltoid

d) Anterior abdominal wall

Correct Answer - C

Ans. is 'c' i.e., Deltoid

o Rabies vaccine is given by either of two routes:?

i) *Intramuscular* : *Deltoid (most preferred)* and/or thigh (in children < 2 years, anterolateral thigh is preferred). ii) *Intradermal* : Over deltoid and/or thigh.

o In intramuscular regimen, injection is given into deltoid, while in intradermal regimen, injection is given intradermally over deltoid.

800. Street rabies virus cause ?

a) Natural rabies

b) Laboratory passage in rabbit

c) Fatal encephalitis in 6 days

d) Negri bodies not seen

Correct Answer - A

Ans. is 'a' i.e., Natural rabies

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801. Which is the longest DNA of hepatitis B virus ?

a) P gene

b) X gene

c) S gene

d) C gene

Correct Answer - A
Ans. is 'a' i.e., P gene

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802. True about hepatitis A viurs ?

- a) Causes cirrhosis
- b) Helps HDV replication
- c) Common cause of hepatitis in children
- d) Causes chronic hepatitis

Correct Answer - C

Ans. is 'c' i.e., Common cause of hepatitis in children

- *HAV is the most common cause of hepatitis in children.*
- HAV does not cause chronic hepatitis or cirrhosis.
- HBV (no HAV) helps in HDV replication.

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803. Macrophage tropic strains of HIV use ?

a) CCR5

b) CXCR4

c) CCR4

d) None

Correct Answer - A

Ans. is 'a' i.e., CCR5

Receptors for HIV

- The receptor for the virus is CD4 antigen, and therefore the virus may infect any cell bearing the CD4 antigen on the surface this is primarily the CD4 + (Helper) T Lymphocyte
- Specific binding of virus to CD4 receptor is by the envelope glycoprotein gp-120. However, for infection to take place, cell fusion is essential, which is brought about by the transmembrane gp41.
- Entry of virus into the cells also requires coreceptor molecule :-
T cell CXCR4
Macrophage CCR5

804. Influenza virus has -

a) 5 segments of SS RNA

b) 8 Segments of ds DNA

c) 8 segments of ssDNA

d) 8 segments of ssRNA

Correct Answer - D

Ans. is 'd' i.e., 8 segments of ssRNA

INFLUENZA VIRUS

- Belong to orthomyxoviridae —. Envelope, RNA virus
- Contain single stranded RNA which is segmented —4. 8 pieces
- There are three viral subtypes
 1. Type A Causes all pandemics and most of the epidemics
 2. Type B Can cause epidemics
 3. Type C —> Causes endemic infection
- Three types of influenza viruses are circulating in world —> A (H1N1), A (H3N2) and B
- A new type has been recognized -A (H5N1)
- Source of infection —> case or subclinical case
- Mode of transmission —> Droplet infection by respiratory route
- Incubation period _____ 18-72 hours
- Clinical manifestations
 - * Most infections are subclinical
 - * Fever, headache and myalgia
 - * Respiratory —> coughing
 - * There is no viremia
- Complications
 - * Pneumonia --> M.C. by str. pneumoniae
 - * Worsening of COPD

- * worsening of COPD
- * Encephalitis
- * Reye's Syndrome with type B virus
- * GB. Syndrome
- * G I Symptoms (gastric flu) —i type B virus
- Laboratory diagnosis
 - * *most commonly, the diagnosis is established by the use of rapid viral tests that detect viral nucleoprotein or neuraminidase*
 - * Best specimen is nasopharyngeal secretion.

805. Lysis of bacterial colony in culture is seen by which virus -

a) Pox

b) HSV

c) Bacteriophage

d) CMV

Correct Answer - C

Ans. is 'c' i.e., Bacteriophage

- Lysis of bacteria occurs due to replication of bacteriophage in the bacteria, in lytic cycle.
- The process of lytic cycle occurs in following steps :?
 - 1) Adsorption (attachment) of a phage to the surface of a susceptible bacterium by its tail.
 - 2) Penetration of phage nucleic acid into the bacterial cells.
 - 3) Synthesis of phage components.
 - 4) Assembly of phage components into mature infective phage particles, i.e. *maturation*.
 - 5) Release of mature progeny phage.

806. Prions are best killed by

a) Autoclaving at 134°C

b) 5% formaline

c) Sodium hypochloride

d) None of these

Correct Answer - A

Ans. is 'A' i.e., Autoclaving at 134°C

- Incineration is the only way of disinfecting prion-contaminated materials or tissues.
- Boiling or irradiation does not affect and even routine autoclaving (at 121°C) is not reliable. Therefore, where there is a risk of exposure, surgeons use disposable instruments.
- To sterilize reusable instruments, WHO currently recommends combined use of a strong solution of sodium hydroxide and extended autoclaving at 134°C.
- "Autoclaving at 134°C for 5 hrs or treatment with 2N NaOH for several hours is recommended for sterilization of prions".
- since Sodium hydroxide option not available, correct answer is A

807. Numbers of variable regions on each light and heavy chain of an antibody ?

a) 1

b) 2

c) 3

d) 4

Correct Answer - A

Ans. is 'a' i.e., 1

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808. Immunoglobulin changes in variable region ?

a) Idiotype

b) Isotype

c) Allotype

d) Epitope

Correct Answer - A
Ans. is 'a' i.e., Idiotype

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809. Papain acts on gamma globulin to form ?

a) 2 Fc fragments

b) 2 Fab fragments

c) 1 Fab fragments

d) None

Correct Answer - B

Ans. is 'b' i.e., 2 Fab fragments

. Papain acts at hinge region to produce :?

1) *One Fc fragments*

2) *Two Fab fragments*

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810. Heat labile immunoglobulin

a) IgA

b) IgG

c) IgE

d) IgM

Correct Answer - C

Ans. is 'c' i.e., IgE

- Only heat labile Ig
- Inactivated at 56 degrees C in one hour.

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811. Major immunoglobulin secreted by intestine ?

a) IgG

b) IgM

c) IgA

d) IgD

Correct Answer - C

Ans. is 'c' i.e., IgA

It is the second most abundant antibody (after IgG)

It is major immunoglobulin in clostrum, saliva, tears, respiratory and gastrointestinal secretions.

812. All are true regarding development of T-cells, except?

- a) T-cells are formed in bone marrow
- b) Maturation of T-cells take place in thymus
- c) T-cell are located in mantle layer of spleen
- d) In lymph nodes, T-cells are found in paracortical area

Correct Answer - C

Ans. is 'c' i.e., T-cell are located in mantle layer of spleen

T cells origin and maturation

- T cells originate in the bone marrow, fetal liver and yolk sac and mature in thymus.
- T cell precursors from the yolk sac, fetal liver and bone marrow migrate to the thymus during embryonic and postnatal life.
- Maturity of T-cells takes place in the thymus.
- After maturity T-lymphocytes are selectively seeded into certain sites of the peripheral lymphatic tissues, known as "thymus - dependent regions".
- Thymus dependent regions are -
- Paracortical area of lymph node.
- White pulp of the spleen, around the central arteriole.
- After neonatal thymectomy, the source of mature T cells (thymus) will be absent. As a result the thymus dependent regions of peripheral lymphoid organs will be depleted of T cells.

B-cell origin and maturation

- In contrast to T cells (which originate in bone marrow and mature in thymus), origin as well as maturation of B- cells takes place in the bone marrow.
- After maturation, B- cells migrate to peripheral T- cell independent

lymphoid regions.

- T- cell independent regions are ?
 - .. Perifollicular region and mantle layer of spleen.
 - 2. Cortical follicles, germinal centres and medullary cords of lymph node.

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813. T cells in lymph node are present in:

a) Paracortical area

b) Mantle layer

c) Medullary cords

d) Cortical follicles

Correct Answer - A

Ans. a. Paracortical area

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814. Capacity of producing IgG starts at what age

a) 6 months

b) 1 year

c) 2 years

d) 3 years

Correct Answer - A

Ans. is 'a' i.e., 6 months

- Immediately after birth, the newborn has high level of IgG antibodies in blood stream. But these antibodies are passively transferred to the baby from mother (i.e., maternal antibodies).
- During next few months, the maternal IgG antibodies steadily decrease.
- When healthy baby is about 2-3 months old, the immune system starts producing its own IgG antibodies.
- *Once healthy babies reach six months of age, their IgG production reaches at normal level.*

Note

- IgM antibodies production starts before birth only (3-6 months before), but at very low level.

815. Rosette formation with sheep RBC's indicate functioning of -

a) T-cells

b) B-cells

c) Neutrophils

d) Monocytes

Correct Answer - A

Ans. is 'a' i.e., T-cells

T cells bind to sheep erythrocytes forming rosettes (SRBC or E rosette) by CD2 antigen.

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816. Complement attaches to immunoglobulin at ?

a) Aminoterminal

b) Fab region

c) Variable region

d) Fc fragment

Correct Answer - D

Ans. is 'd' i.e., Fc fragment

. Fc fragment is composed of the carboxyterminal. It determines the biological activity such as complement fixation, placental transfer, skin fixation and catabolic rate.

- CH-2 of Ig G and C_H, of IgM bind to C₁q portion of C1.

817. The Fc piece of which immunoglobulin fixes C1

a) IgA

b) IgG

c) IgM

d) c and b

Correct Answer - D

Ans. is 'c' > 'b' i.e., IgM > IgG

- Make it very clear in your mind that both IgM and IgG fix C 1.
" C2 of IgG and C₁₁4 of IgM bind to C1q portion of C1"-----

Ananthanarayan

"C1q portion of C1 is an aggregate of 18 polypeptides that binds to the Fc portion of IgM and IgG."---LANGE microbiology

- However, if you will have to choose one option, IgM is the best because IgM is more effective than IgG for complement fixation.

818. Cytolytic activity of membrane attack complex is modulated by ?

a) Factor I

b) Factor B

c) Factor S

d) Factor H

Correct Answer - C
Ans. is 'c' i.e., Factor S

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819. All are true regarding interleukin-1 except ?

- a) Primary source is monocyte-macrophage system
- b) Endogenous pyrogens
- c) Inhibit IL-2 production by T-cells
- d) All are true

Correct Answer - C

Ans. is 'c' i.e., Inhibit IL-2 production by T-cells

Interleukin -1

- Also known as leucocyte activating factor (LAF) or B cell activating factor (BAF).
- Principally secreted by macrophages and monocytes; and epithelial cells.
- Other sources are B lymphocytes, fibroblasts and endothelial cells.
- Immunological effects-
- Activation of T cells for the production of IL - 2.
- B cell proliferation and antibody synthesis
- Neutrophil chemotaxis and increased PMN release from bone marrow.
- Increases body temperature (important endogenous pyrogen).
- Bone marrow cell proliferation
- Induction of acute phase protein.

820. Which of the following is a superantigen ?

a) Cholera toxin

b) Diphtheria toxin

c) TSST

d) Vero-cytotoxin

Correct Answer - C

Ans. is 'c' i.e., TSST

Superantigens

- Certain species of infectious microorganisms produce powerful, immunostimulatory and disease causing toxins called superantigen, so called because of their ability to polyclonally active large fraction (up to 20%) of T cell population.
- Superantigens are potent activators of T-lymphocytes.
- Superantigens stimulate very large numbers of T cells, without relation to their epitope specificity. This leads to an excessive and dysregulated immune response with release of cytokines IL - 1, IL - 2, TNF - α and IF - γ .
- Conventional antigens bind to MHC class I or II molecules in the groove of the $\alpha\beta$ dimer (T cell receptor). In contrast, superantigen bind directly to the lateral portion of TCR β chain and MHC class II β chain, and stimulate T cells solely on V β gene segment utilized independent of the D, J and α - sequences present $\rightarrow$ T β 3 restricted T cell mitogens.
- Superantigens are capable of activating up to 20% of the peripheral T-cell pool, where as conventional antigens activate < 1 in 10, 000.

Examples of superantigen

Staphylococcal toxic shock syndrome Certain nonhuman

Staphylococcal toxic shock syndrome toxin

Staphylococcal enterotoxins

Staphylococcal exfoliative (erythrogenic) toxin

Streptococcal toxic shock syndrome toxin

retroviral proteins.

Yersinia

pseudotuberculosis

Mycoplasma arthritis.

Mouse mammary tumor virus.

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821. Hybridoma technique is used to obtain ?

a) Specific antigen

b) Complement

c) Specific antibody

d) Interleukins

Correct Answer - C

Ans. is 'c' i.e., Specific antibody

- Hybridomas are cells that have been engineered to produce a specific antibody in huge numbers.

Hybridomas

- Hybridomas are cells that have been engineered to produce a specific antibody in huge numbers
- To achieve this, qualities of two types of cells have to be combined together i.e.
- Cells which can produce large amount of pure antibody and
- Cells which have the ability to grow continually.
- These two types of cells are then fused together to form hybridoma.

Procedure

- The pure antibody secreting cells are produced by injecting specific antigen in a mouse and obtaining the antigen specific plasma cells (antibody producing cell) from the mouse's spleen.
- Cell which can grow indefinitely in culture are myeloma cells (cancerous cells).
- These two cell lines are fused together. The hybrid cell which is thus produced can be cloned to produce large number of identical daughter clones.
- These daughter clone cells then produce antibodies. Since these antibodies come from only one type of cell (hybridoma cell) they are

called monoclonal antibodies.

- HAT (hypoxanthine, Aminopterin and thymidine) medium is used for preparation of monoclonal antibodies because it allows only fused hybridoma cells to grow. It does not allow the unfused myeloma and unfused antibody cells to grow. So HAT medium is a selective medium which allows (which allow selective growth of fused hybridoma)
- How does this happen ?
- Before we move on with the discussion, remember these few points about purine synthesis.
- Purine synthesis is essential for the survival of cells.
- Purine can be synthesized in two way i.e.
- De novo synthesis (dihydrofolate reductase enzyme is required for this pathway).
- Salvage pathway (an enzyme hypoxanthine - guanine phosphoribosyl transferase is required for salvage pathways)
- Myeloma cells lack HGPRTase enzyme therefore they cannot synthesize purine by salvage pathways. o Antibody cells have HGPRTase enzyme so they can use the salvage pathways.
- Aminopterin inhibits dihydrofolate reductase an enzyme used in denovo synthesis of purine
- When two cell lines i.e. antibody producing cell and myeloma cells are grown in HAT medium only the fused hybridoma cells survive.
- Myeloma cells die because they lack the enzyme HGPRTase so they cannot use the salvage pathways for purine synthesis. They also cannot use de-novo pathway, because Aminopterin present in the HAT medium inhibits dihydrofolate reductase (an enzyme essential for denovo synthesis of purine).
- The unfused antibody producing cells die as they cannot grow indefinitely because of their limited life span.
- Only fused hybridoma cells grow indefinitely because the antibody cell partner supplies HGPRTase and the myeloma partner gives it immortality. (as it is a cancer cell)

822. Job's syndrome is the following type of immunodeficiency disease

- a) Humoral immunodeficiency
- b) Cellular immunodeficiency
- c) Disorder of complement
- d) Disorder of phagocytosis

Correct Answer - D

Ans. is 'd' i.e., Disorder of phagocytosis

- Job's syndrome is defect in phagocytic function.
- It is characterized by cold staphylococcal abscess, atopic eczema, otitis media; serum immunoglobulins are normal except IgE that is elevated

823. Acute phase reactants are all except ?

a) C-reactive protein

b) Haptoglobin

c) Endothelin

d) Fibrinogen

Correct Answer - C

Ans. is 'c' i.e., Endothelin

Acute phase proteins (reactants)

- Acute phase reactants are a class of proteins whose plasma concentration increases or decreases in response to inflammation.
- This response is called the acute phase reaction (acute phase response)
- It should be noted that acute phase proteins not only increase in response to inflammation ; some decrease also
- .. Proteins which increase in response to inflammation —> Positive acute phase proteins
- 2. Proteins which decrease in response to inflammation Negative acute phase proteins

1. Positive acute phase proteins

C-reactive protein (CRP)

α-1 antitrypsin

Fibrinogen, prothrombin, vWF

Ferritin

Serum amyloid A

D Plasminogen, Factor VIII

α-2 microglobulin

Mannose binding protein

D-dimer protein

Haptoglobin

Ceruloplasmin

Complement factors

2. Negative acute phase proteins

↓ Albumin & Prealbumin

Transferrin

Transcortin

Retinol binding protein

I ransthyretin

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824. Innate immunity involves ?

a) T-cells

b) B-cells

c) Macrophages

d) Antibodies

Correct Answer - C

Ans. is 'c' i.e., Macrophages

Macrophages and neutrophils are phagocytic cells that engulf a microbial pathogen after it has been identified by the innate immune system

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825. ABO isoantibodies are of which class

a) IgG

b) IgM

c) IgD

d) IgA

Correct Answer - B

Ans. is 'b' i.e., IgM

- The ABO antigens represent carbohydrate moieties present on erythrocytes.
- Individual naturally develop antibodies (called isoantibodies), usually of IgM isotype, specific for ABO antigens that do not express.
- If the individual receives a transfusion of blood that contains incompatible ABO antigens, isoantibodies will cause agglutination of donor cells.
- This process is called as isohemagglutination, the antigens are called isohemagglutinins.
- Also remember
- Anti-Rh antibodies are of IgG class

826. Thomsen friedensreich phenomenon is ?

- a) Red cells infection by CMV
- b) Red cell agglutination by all blood group sera
- c) Hemolysis of transfused blood
- d) Due to B antigen

Correct Answer - B

Ans. is 'b' i.e., Red cell agglutination by all blood group sera

Thomsen-Freidenreich Phenomenon

- Red cell suspensions contaminated with certain bacteria, e.g. pseudomonas aeruginosa, become agglutinable by all blood group sera and even by normal human sera.
- This is known as Thomsen Friedenreich phenomenon and is due to unmasking of a hidden antigen normally present on all human erythrocytes, i.e. T-antigen.
- Anti-T agglutinins are normally present in human sera.
- Such panagglutinability of red cells has occasionally been observed in persons suffering from systemic bacterial infections.

827. Bioterrorism group A agent

a) Q fever

b) Typhus fever

c) Brucella

d) Antrax

Correct Answer - D
Ans. is 'd' i.e., Antrax

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828. Which of the following belongs to category-B of bioterrorism -

a) Cholera

b) Anthrox

c) Plague

d) Botulism

Correct Answer - A
Ans. is 'a' i.e., Cholera

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829. An adolescent male developed vomiting and diarrhea 1 hour after having food from a restaurant. The most likely pathogen is?

a) *Clostridium perfringens*

b) *Vibrio parahaemolyticus*

c) *Staphylococcus aureus*

d) *Salmonella*

Correct Answer - C

Ans. is 'c' i.e., *Staphylococcus aureus*

. Among the given options, only *staphylococcus* can cause gastroenteritis within 6 hours.

830. Ligamentum teres is formed after ':

- a) Obliteration of the umbilical vein
- b) Obliteration of the ductus venous
- c) Obliteration of the ductus arteriosus
- d) Obliteration of the hypogastric artery

Correct Answer - A
Obliteration of the umbilical vein

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831. The number of bacteria on skin are

a) $10^1 - 10^2$

b) $10^2 - 10^5$

c) $10^5 - 10^{10}$

d) $>10^{10}$

Correct Answer - D

Ans. is 'd' i.e., $>10^{10}$

- It has been calculated that a human adult has about 10^{12} bacteria on the skin.

832. The number of bacteria per cm of skin are ?

a) 10^1 - 10^2

b) 10^2 - 10^3

c) 10^5 - 10^{10}

d) $>10^1$

Correct Answer - B

Ans. is 'b' i.e., 10^2 - 10^3

- Density of bacterial population at most sites is between 100-1000 per square cm.

833. The predominant colonic bacteria are -

a) Largely aerobic

b) Largely anaerobic

c) Bacteroides

d) Staphylococci

Correct Answer - B

Ans. is 'b' i.e., Largely anaerobic

* In the adult normal colon, the resident bacterial flora are mostly (96 - 99 per cent) anaerobes :

* Anaerobic streptococci (Peptostreptococci)

-

Clostridia

* Anaerobic lactobacilli (bifidobacteria)

-

Bacteroides

* 1-4 per cent are aerobes :

* Enterococci

* Pseudomonas

* Coliforms

*

Lactobacilli * Proteus Remember

* In duodenum and upper ileum, predominant organisms are —>

Lactobacilli and enterococci.

* In lower ileum and cecum —> Flora resemble the fecal flora.

834. Bacterial count in doudenum

a) 10^5 per gram

b) 10^1 per gram

c) 10^{10} per gram

d) 10^2 per gram

Correct Answer - A

Ans. is 'a' i.e., 10^5 per gram

In GIT of an adult :

Duodenum → $10^3 - 10^6$ bacteria per gram.

Jejunum and proximal ileum → $10^1 - 10^8$ bacteria per gram

Lower ileum and cecum → $10^8 - 10^{10}$ bacteria per gram

Colon and rectum → $10^{11} - 10^{12}$ bacteria per gram

- Colon and rectum have maximum number of bacteria and most of them (96-99%) are anaerobes :
- Anaerobic streptococci
- Clostridia
- Anaerobic lactobacilli
- Bacteroides

835. Bacteria showing antigenic variation ?

a) Yersinia

b) Bordetella

c) Brucella

d) Borrelia

Correct Answer - D

Ans. is 'd' i.e., Borrelia

- Bacteria showing antigenic variation are :?
 - i) Neisseria (Meningococci, Gonococci)
 - ii) Streptococcus spp
 - iii) Mycoplasma
 - iv) *Borrelia burgdorferi*

836. Most common organism causing ventilator associated pneumonia -

- a) Legionella
- b) Pneumococcus
- c) Pseudomonas
- d) Coagulase negative staphylococcus

Correct Answer - C

Ans. is 'c' i.e., Pseudomonas

- *Staphylococcus aureus* and *Pseudomonas aeruginosa* cause most of the cases of ventilator associated pneumonia (VAP).
- Other common organisms causing VAP are *enterococcus faecium*, *Acinetobacter baumannii*, *enterobacter species* and *klebsiella pneumoniae*.
- Mnemonic : ESKAPE (Enterococcus, staphylococcus, klebsiella, Acinetobacter, Pseudomonas, enterobacter).
- As single most common organism, pseudomonas is the causative agent ?

- <i>Pseudomonas aeruginosa</i>	—>21%
- <i>Staphylococcus aureus</i>	—>20%
- <i>Enterobacter species</i>	—>9%
- <i>Klebsiella pneumoniae</i>	—>8%
- <i>Acinetobacter</i>	—>6%

837. Most common mode of transmission of nosocomial infection is -

a) Hand contact

b) Droplet infection

c) Blood and blood products

d) Contaminated water

Correct Answer - A

Ans. is 'a' i.e., Hand contact

Modes of transmission of nosocomial infections

- There are following types of modes of transmission of hospital-acquired infections.

1) Contact transmission

* It is the *most common and most preventable means of transmission*. It is divided into two types -

i) *Direct contact* : It involves contact of body surface to body surface with a physical transfer of microorganisms. *Hand contact is most common mode of transmission*.

ii) *Indirect contact* : It involves body surface contact with a contaminated intermediate object.

2) Droplet transmission

* It occurs when droplet containing microorganisms from an infected person are propelled through the air (e.g. coughing, sneezing) and land on the mouth, eyes or nose of another person.

3) Airborne transmission

* It results when a droplet containing microorganisms evaporates and remains suspended in air for a long time (this should not be confused with droplet infection, in which transmission is immediate and droplets do not remain suspended in the air).

* Airborne transmission also occurs by dust particles containing microorganism.

4) Vehicle transmission

* It refers to transmission of infection by contaminated items such as food, water, medications, devices and equipment.

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838. Golden yellow jelly fungus is ?

a) T tursurans

b) T montegrophytes

c) Tremella mesenterica

d) E floccosum

Correct Answer - C

Ans. is 'c' i.e., Tremella mesenterica

- The term jelly fungus is sometimes applied to any fungus with a jelly like fruiting body, but it is especially appropriate for the members of a group of taxa traditionally assigned to the order Tremellales.
- Largest genus is Tremella, which consists of about 80 species.
- Tremella mesenterica (witches butter) is a commonly encountered species which has orange to golden yellow fruiting bodies. Therefore it is also called as *golden yellow jelly fungus* or *yellow brain* or *yellow trembler*.

839. Dukoral is:

- a) Oral cholera vaccine
- b) Oral rotavirus vaccine
- c) Oral typhoid vaccine
- d) Ready to use therapeutic food

Correct Answer - A

Dukoral is a monovalent cholera vaccine based on formalin and heat killed whole cells of vibrio cholerae 01 plus recombinant cholera toxin B subunit.

Ref: Park 21st edition, page 211.

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840. MDR TB must be treated for at least ?

a) 12 months

b) 18 months

c) 20 months

d) 36 months

Correct Answer - C

Ans. is 'c' i.e., 20 months

Resistance

(or Throughout RZE
intolerance) (6)

to H

Resistance

(or Throughout HZEQ
intolerance) (12-18)

to R

Resistance Throughout ZEQ + S (for
to H + R (at least 20 another
months) injectable
agents)

1 injectable
agent + 3 of

Resistance Throughout of these

to all first- (at least 20 4
line drugs months

ethionamide
cycloserine,
Q, PAS

Intolerance
to Z

HRE

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841. Father of Indian Surgery is ?

a) Dhanvantari

b) Charaka

c) Susruta

d) Atreya

Correct Answer - C

Ans. is 'c' i.e., Susruta

- Father of (Modern) Medicine : Hippocrates
- Father of Indian Medicine : Charaka
- Hindu God of Medicine : Dhanvantari
- Father of (Modern) Surgery : Ambroise Pare
- Father of Indian Surgery : Sushruta
- Father of Epidemiology/Modern Epidemiology : John Snow
- Father of Bacteriology : Louis Pasteur
- Father of Biology : Gregor Mendel
- Father of (Modern) Anatomy : Vesalius
- Father of Physiology : Claude Bernard
- Father of Psychoanalysis : Sigmund Freud
- Father of Homeopathy : Semuel Hahneman
- Father of Anti-sepsis : Joseph Lister

842. AIDS day is ?

a) 7 April

b) 3 May

c) 5 June

d) 1 December

Correct Answer - D
Ans. is 'd' i.e., 1 December

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843. The lawyer who designed the Public Health Act 1848 was ?

a) John snow

b) Edwin Chadwick

c) Joseph Lister

d) William Fan

Correct Answer - B

Ans. is 'b' i.e., Edwin Chadwick

* The great cholera epidemic of 1832 led *Edwin Chadwick (1800-1890)*, a lawyer in England, to investigate the health of the inhabitants of large towns with a view to improve the conditions under which they live.

* Chadwick's report on "*The Sanitary Conditions of the Labouring Population in Great Britain*", a landmark in the history of public health, set London and other cities on the way to improve housing and working conditions.

* Filth was recognized as man's greatest enemy and with this began an anti-filth crusade, the "*great sanitary awakening*", which led to the enactment of 'Public Health Act 1948' in England.

844. Principle for chinese medicine -

a) Yang

b) Yin

c) Both

d) None

Correct Answer - C

Ans. is 'c' i.e., Both

* Chinese medicine is based on two principles:-

i) *Yang* : Active masculine principle

ii) *Yin* : Negative feminine principle

* The balance of these two opposing forces meant good health.

* The Chinese were early pioneers of immunization. They practised *variolation to prevent smallpox*.

* The Chinese system of 'bare-foot doctors' and acupuncture have attracted worldwide attention in recent years.

845. BEINGS Model of disease causation does not include

a) Spiritual factors

b) Social factors

c) Religious factors

d) Nutritional factors

Correct Answer - C

Ans. is 'c' i.e., Religious factors

One way of remembering the categories of cause for the disease is an acronym used in the model (BEINGS model):

B: Biological factors and behavioral factors.

E: Environmental factors.

I: Immunological factors.

N: *Nutritional factors*.

G: Genetic factors.

S: Services, *social*, *spiritual* factors.

846. According to MDG child mortality has to be reduced by how, much by 2015 ?

a) One third

b) Half

c) Two third

d) One fourth

Correct Answer - C

Ans. is 'c' i.e., Two third [Ref Park 20th/e p. 834]

3 of 8 goals of MDG (Goal 4, 5, 6), 8 of 18 targets and 18 of 48 indicators are 'directly' health related.

1. Goal 1: Eradicate extreme poverty and hunger.
2. Goal 2: Achieve universal primary education.
3. Goal 3: Promote gender equality and empower women.
4. Goal 4: Reduce child mortality (Reduce by two-thirds the under-five mortality rate).
5. Goal 5: Improve maternal health (Reduce by three-quarters the maternal mortality ratio).
6. Goal 6: Combat HIV/AIDS, malaria and other diseases.
7. Goal 7: Ensure environmental sustainability.
8. Goal 8: Develop a global partnership for development.

847. Millennium developmental goal for HIV/AIDS ?

a) 6

b) 3

c) 8

d) 1

Correct Answer - A

Ans. is 'a' i.e., 6

o Goal 6 is to combat HIV/AIDS; malaria and other diseases.

848. According to 'Biomedical concept' health is

- a) Relative absence of pain and discomfort
- b) Absence of disease
- c) A sound mind in sound body, in a sound family, in sound environment
- d) None

Correct Answer - B

Ans. is 'b' i.e., Absence of disease

- According to biomedical concept health is defined as "*absence of disease*", and has the basis in the "*germ theory of disease*"

849. Most important component of level of living is

a) Health

b) Education

c) Occupation

d) Housing

Correct Answer - A

Ans. is 'a' i.e., Health

Health is the most important component because its impairment always means impairment of level of living.

850. Quality of life is defined as?

- a) Standard of living
- b) Level of living
- c) Subjective feeling of well being
- d) All of the above

Correct Answer - C

Ans. is 'c' i.e., Subjective feeling of well being

Quality of life

- * The level of living and standard of living are objective criteria of well being, *while quality of life comprises the individual's own subjective evaluation of these.*
- * Recent definition of quality of life is as follows "*a composite measure of physical mental and social well being as perceived by each individual or group of individuals.*"
- * WHO definition is as follows "*the condition of life resulting from the combination of the effects of the complete range of factors such as those determining health, happiness, education, etc.*"

851. Definition of disease control is?

- a) Agent is eliminated from community
- b) Agent persists in community without causing health problem
- c) Agent persists in community and causing public health problems
- d) Any of the above

Correct Answer - B

Ans. is 'b' i.e., Agent persists in community without causing health problem

* In disease control, *the disease agent is permitted to persist in the community at a level where it ceases to be a public health problem according to the tolerance of local population.*

* A state of equilibrium becomes established between the disease agent, host and environment components of the disease process.

852. A patient prescribed crutches for residual paralysis in poliomyelitis is a type of -

a) Primary prevention

b) Primordial prevention

c) Disability limitation

d) Rehabilitation

Correct Answer - D

Ans. is 'd' i.e., Rehabilitation

- Provision of aids for crippled is rehabilitation, e.g. prescription of crutches for PRPP.
- It is a type of tertiary prevention.

853. Secondary level of prevention is important in all of the following except ?

a) Coronary heart disease

b) TB

c) Leprosy

d) None

Correct Answer - A

Ans. is 'a' i.e., Coronary heart disease

- For non-communicable disease (e.g. CHD), primordial prevention is best intervention.

854. A patient had injury to right leg by road traffic accident and his leg was amputated. This is ?

a) Disease

b) Disability

c) Impairment

d) Handicap

Correct Answer - C

Ans. is 'c' i.e., Impairment

- Any loss of anatomical structure (e.g. loss of leg in this question) is called as impairment.
- According to WHO definitions,
- Disease: Any abnormal condition of an individual that impairs function
- Impairment: Any loss or abnormality of psychological, physiological or anatomical structure or function
- Disability: (Because of impairment,) any restriction or inability to perform an activity in a range considered normal for a human being
- Handicap: A disadvantage for a given individual, resulting from an impairment/disability, that limits/prevents fulfillment of a role considered normal (depending on age, sex, social, cultural factors) for that individual For example,

Event	Classification	Interpretation
Accident	Disease	Impairs function of a person
Loss of foot	Impairment	Loss of anatomical structure in the form of foot
Cannot walk	Disability	Walking is a normal routine daily activity of a human being

walk	or a human being
Unemployed Handicap	Loses out his job because he cannot walk, so cannot fulfill his role in the society, i.e, earning for his family members

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855. A person has lost his leg in an accident because of which he is not able to walk. This is -

a) Disease

b) Disability

c) Impairment

d) Handicap

Correct Answer - B

Ans. is 'b' i.e., Disability

* This question is slightly different from previous one.

* Patient in this question is not able to walk (due to lost leg). This is called disability.

* Remember that the patient in this question also has impairment, i.e. loss of leg. (But the examiner is asking about inability to walk, in this question).

856. Sullivan's index indicates

- a) Life free of disability
- b) Pregnancy rate per HW
- c) Hook worm eggs/gm of stool
- d) Standard of living

Correct Answer - A

Ans. is 'a' i.e., Life free of disability

Sullivan's index

- Sullivan's index is the *expectation of life free of disability*.
- It is computed by subtracting from the life expectancy the probable duration of bed disability and inability to perform major activities.
- Sullivan's index = life expectancy — Duration of bed disability & Inability to perform minor work
- It is a *direct* indicator of health and well being in a community.
- *It is one of the most advanced health indicators currently available.*

857. Randomization is done to reduce ?

a) Recall bias

b) Selection bias

c) Berksonian bias

d) Reporting bias

Correct Answer - B
Ans. is 'b' i.e., Selection bias

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858. Limitation of case fatality rate-

- a) Not useful in acute infectious disease
- b) Not related to virulence
- c) Time period not specified
- d) It is not related to survival rate

Correct Answer - C

Ans. is 'c' i.e., Time period not specified

- o Limitations of case fatality rate is that time period is not specified.
- o CFR is typically used in acute infectious disease and is related to virulence of organism.
- o Case fatality rate is the complement of survival rate.

859. All are true about incidence, except-

- a) Numerator includes new cases
- b) Denominator includes population at risk
- c) Does not include unit of time
- d) It is a rate

Correct Answer - C

Ans. is 'c' i.e., Does not include unit of time

o *Incidence rate must include the unit of time used in the final expression.* If you write 16.7 per 1000, this would be inadequate. The correct expression is 16.7 per 100 per year.

o All other options are correct.

860. The difference between contamination and infection is that in infection-

- a) Infectious agent is on body surface or on nonhuman objects
- b) Infectious agent is in the body of human
- c) Arthropods on the body surface
- d) None

Correct Answer - B

Ans. is 'b' i.e., Infectious agent is in the body of human

o *Infection* --> Infectious agent in the body.

o *Contamination* ---> Infectious agent on body surface or on objects.

o *Infestation* --> Arthropods on body surface.

861. Threshold level of herd immunity for Pertussis is?

a) 80%

b) 70%

c) 90%

d) 50%

Correct Answer - C

Ans. is 'c' i.e., 90%

Herd immunity

- It is the level of resistance of a community or group of people to a particular disease.
- It occurs when the vaccination of a portion of the population (or herd) provides protection to unprotected (non? vaccinated) individuals.
- Advantage of herd immunity
- It is not necessary to achieve 100% immunization to control a disease by providing herd immunity.
- When a certain percentage of population, is vaccinated, the spread of disease is effectively stopped.
- This critical percentage is referred to as herd immunity threshold.

Disease	Herd immunity threshod
Diphtheria	→ 85%
Measles	→ 83-94%
Mumps	→ 75-86%
Pertussis	→ 92-94%
Polio	→ 80-86%
Rubella	→ 80-85%
Small pox	→ 83-85%

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862. India started 2-dose vaccination strategy for measles, in -

a) 2008

b) 2009

c) 2010

d) 2011

Correct Answer - C

Ans. is 'c' i.e., 2010

o In the year 2010, the world's two most populous countries made promising advances in measles control :- i) China held the largest ever SIA, vaccinating more than 103 million children.

India started implementation of 2-dose vaccination strategy.

863. Congenital acquired immunity is NOT found in -

a) Pertussis

b) Mumps

c) Rubella

d) Measles

Correct Answer - A

Ans. is 'a' i.e., Pertussis

Congenital passive immunity (maternal passive immunity)

o Maternal passive immunity is a type of naturally acquired passive immunity.

o It refers to antibody-mediated immunity conveyed to a fetus by its mother during pregnancy. o Important infection, against which immunity is transferred from mother to child ?

1) Chicken pox

3) Rubella

5) Diphtheria

2) Measles

4) Mumps

6) Polio

o Important diseases for which there is no maternal passive immunity ?

1) Pertussis (whooping cough)

3) Hepatitis B

2) TB

864. Which vaccine is contraindicated pregnancy

- a) Cholera vaccine
- b) Typhoid vaccine
- c) Meningococcal vaccine
- d) Measles vaccine

Correct Answer - D

Ans. is 'd' i.e., Measles vaccine

As a rule of thumb the vaccination with live viral or bacterial vaccine is contraindicated in pregnancy.

- The important ones are : -
- Measles
- Mumps
- Poliomyelitis
- Rubella
- Yellow fever
- Varicella
- BCG

865. Ideal temperature for DPT storage ?

a) Room temperature

b) 4 to 8°C

c) 0 to - 20°C

d) None

Correct Answer - B

Ans. is 'b' i.e., 4 to 8°C

o *Storage* --> DPT / DT vaccine should not be frozen, they should be stored in a refrigerator between 4 to 8°C.

o *Optimum age* EPI has recommended that DPT vaccine can safely and effectively administered as early as 6 weeks after birth.

o *Number of doses* Three doses are considered to be optimal for primary immunization.

o *Interval between doses* --> The current recommendation is to allow an interval of 4 weeks between 3 doses, with a booster injection at 11/2 to 2 years, followed by another booster (DT only) at the age of 5-6 years.

Dose	Age
DPT_1	6 weeks of age
DPT_2	10 weeks of age
DPT_3	14 weeks of age
$DPT_{300,}$	16-24 months of age
DT	5 years of age

Booster

o *Mode and site of administration* ---> IM at upper & outer quadrant of gluteal region.

Also know

o Since the severity of pertussis infection decreases with age the

pertussis component in DPT vaccine is not usually recommended after the age of 6 years.

o Therefore, children over the age of 5 years who have not received DPT, need only 2 doses of DT vaccine 4 weeks apart, with a booster dose 6 months to 1 year later. Those children who received the primary course of DPT earlier, should receive only DT as booster at 5-6 years or at school entry.

o For immunizing children over 12 years of age and adults, the preparation of choice is DT → 2 doses at an interval of 4 to 6 weeks, followed by a booster 6 to 12 months after the second dose.

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866. Encephalopathy can occur as complication of which vaccine ?

a) OPV

b) Rubella

c) Measles

d) BCG

Correct Answer - C
Ans. is 'c' i.e., Measles

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867. BCG vaccine is diluted with:
September 2005

a) Normal saline

b) Distilled water

c) Dextrose

d) Colloids

Correct Answer - A

Ans. A: Normal saline

BCG Vaccine (Freeze-Dried) for intracutaneous administration, as prepared by Connaught Laboratories Limited, is made from a culture of an attenuated strain of living bovine tubercle bacillus (*Bacillus Calmette-Guerin*).

It is supplied as a freeze-dried product ready for immediate use following reconstitution with the accompanying diluent, which consists of sterile phosphate-buffered normal saline.

Distilled water may cause irritation.

868. All vaccines are given in disaster, except ?

a) Cholera

b) Influenza

c) Measles

d) Tetanus

Correct Answer - A

Ans. is 'a' i.e., Cholera

Vaccines recommended in disasters

o Following vaccines are recommended

1) *Children < 10 years* :- DPT, inactivated polio (IPV), *H.influenzae type b (Hib)*, hepatitis B, pneumococcal conjugate vaccine (PCV), *measles-mumps-rubella (MMR)*, varicella vaccine, *influenza*, hepatitis A and rotavirus.

2) *Children and adolescents (11-18 years)*:- Tetanus, diphtheria, pertussis, meningococcal conjugate vaccine (MCV), Influenza.

3) *Adults (>18 years)*:- Tetanus, diphtheria, pertussis, pneumococcal polysaccharide vaccine (PPSV23), and influenza.

o Vaccination against typhoid and cholera is not recommended.

869. 6th month immunization given is -

a) Measles

b) DPT

c) BCG

d) All

Correct Answer - A

Ans. is 'a' i.e., Measles

o Measles vaccine is given at 6 month.

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870. Screening for condition recommended when ?

- a) Low case fatality rate
- b) Diagnostic tools not available
- c) No effective treatment available
- d) Early diagnosis can change disease course because of effective treatment

Correct Answer - D

Ans. is 'd' i.e., Early diagnosis can change disease course because of effective treatment

Criteria for screening

o The criteria for screening are based on two consideration.

i) *Disease to be screened*

ii) *Screening test to be applied*

o Disease to be screened

The disease to be screened should fulfil the following criteria before it is considered suitable for screening.

1. The condition sought should be an important health problem (in general, prevalence should be high).
2. There should be a recognizable latent or early asymptomatic stage.
3. The natural history of the condition, including development from latent to declared disease, should be adequately understood (so that we can know at what stage the process ceases to be reversible).
4. There is a test that can detect the disease prior to the onset of signs and symptoms.
5. facilities should be available for confirmation of the diagnosis.
6. There is an effective treatment.
7. There should be an agreed-on policy concerning whom to treat as

- patients (e.g., lower ranges of blood pressure; border-line diabetes).
- 3. There is good evidence that early detection and treatment reduces morbidity and mortality.
 - 4. The expected benefits (e.g., the number of lives saved) of early detection exceed the risks and costs.

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871. Screening is useful in disease which has?

a) Short lead time

b) Long lead time

c) Both a & b

d) No relation with lead time

Correct Answer - B
Ans. is 'b' i.e., Long lead time

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872. Rash of chickenpox can be differentiated from the rash of small pox by all except ?

a) Pleomorphic

b) Centripetal

c) Deep-seated

d) Unilocular

Correct Answer - C

Ans. is 'c' i.e., Deep-seated

Rash of chickenpox is superficial (not deep seated).

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873. 2 months old child having birth weight 2kg, with poor feeding, very sleepy and wheezing. The diagnosis is?

a) No pneumonia

b) Severe pneumonia

c) Very severe disease

d) None

Correct Answer - C

Ans. is 'c' i.e., Very severe disease

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**874. 3 months old infant, no chest indrawing
with respiratory rate 52/minute.
Diagnosis is**

a) No pneumonia

b) Pneumonia

c) Severe pneumonia

d) Very severe disease

Correct Answer - B

Ans. is 'b' i.e., Pneumonia

- This infant has:?
 - .. Fast breathing (.. 50 per minute between 2 months to 1 years).
 - .. No chest indrawing.
- Diagnosis is Pneumonia.

875. Most important feature to diagnose severe pneumonia?

a) Cyanosis

b) Chest indrawing

c) Nasal flaring

d) Fast breathing

Correct Answer - B

Ans. is 'b' i.e., Chest indrawing

- The only sign for severe pneumonia is chest indrawing

876. Most common cause of death in diphtheria is due to

- a) Airway compromise
- b) Toxic cardiomyopathy
- c) Sepsis
- d) Descending polyneuropathy

Correct Answer - B

Answer- B. Toxic cardiomyopathy

- Most common cause of death in diphtheria cardiomyopathy

877. Most common cause of post-measles death ?

a) Diarrhea

b) RTI

c) SSPE

d) Myocarditis

Correct Answer - B

Ans. is 'b' i.e., RTI

- Respiratory tract infection (RTI) is the most common cause of death. "Pneumonia is the most common life-threatening complication" _____ Park

878. A person is considered as a case of tuberculosis if -

- a) Has cough
- b) Sputum positive
- c) X-ray signs
- d) Mantoux positive

Correct Answer - B

Ans. is 'b' i.e., Sputum positive

- Case of tuberculosis is defined as, either any of the two : -
 1. At least one sputum specimen positive for AFB or culture positive for M. Tuberculosis or RNTCP endorsed rapid diagnostic test positive for TB.
 2. Diagnosed clinically as a case of TB without microbiologic confirmation, and initiated on ATT.

Some definitions of tuberculosis cases and treatment

- Case of tuberculosis : A patient in whom tuberculosis has been confirmed by bacteriology or diagnosed by a clinician.
- Sputum smear examination - Laboratory technique to screen sputum for tuberculosis, where acid fast bacilli (AFB) are stained red by the Ziehl Neelsen method, and then identified and counted using microscopy. Smear positive tuberculosis - At least one initial sputum smears positive for AFB or one AFB positive.
- Smear negative tuberculosis - At least two negative smears, but tuberculosis suggestive symptoms and X-ray abnormalities or positive culture.
- Adherence - Person takes appropriate drug regimen for required time (also known as compliance).
- New case - A patient with sputum positive pulmonary tuberculosis

- who has never had treatment for tuberculosis or has taken anti - tuberculosis drugs for less than 4 weeks.
- Relapse - A patient who returns smear positive having previously been treated for tuberculosis and declared cured after the completion of his treatment.
 - Failure case - A patient who was initially smear positive, who began treatment and who remained or became smear positive again at five months or later during the course of treatment.
 - Return after default - A patient who returns sputum smear positive, after having left treatment for at least two months. Transfer in - A patient recorded in another administrative area register and transferred into another area to continue treatment (treatment results should be reported to the district where the patient was initially registered). Transfer out - A patient who has been transferred to another area register and treatment results are not known. Cured - Initially smear positive patient who completed treatment and had negative smear result on at least two occasions (one at treatment completion).
 - Treatment completed - Initially smear negative patient who received full course of treatment, or smear positive who completed treatment, with negative smear at the end of initial phase, but no or only one negative smear during continuation and none at treatment end.
 - Cohort - A group of patients in whom TB has been diagnosed, and who were registered for treatment during a specified time period (e.g. the cohort of new smear-positive cases registered in the calendar year 2003). This group forms the denominator for calculating treatment outcomes. The sum of the treatment outcomes, plus any case for which no outcome is recorded (eg. still on treatment) should equal the number of cases registered.
 - Case detection rate : - The case detection rate is calculated as the number of notification of new and relapse cases in a year divided by the estimated incidence of such cases in the same year

879. Annual infection rate of tuberculosis is defined as ?

- a) Percentage of total patients positive for tuberculin test
- b) Percentage of new patients positive for tuberculin test
- c) Percentage of sputum positive total patients
- d) Percentage of sputum positive new patients

Correct Answer - B

Ans. is 'b' i.e., Percentage of new patients positive for tuberculin test

Epidemiological indices of tuberculosis

- Indices or parameters are needed to measure the tuberculosis problem in a community as well as for planning and evaluation of control measures.
- The following epidemiological indices are used in tuberculosis problem measurement and programme strategy :?
 1. Prevalence of infection
- It is the percentage of individuals who show a positive reaction to the standard tuberculin test.
 2. Incidence of infection (Annual infection rate)
- It is the percentage of population under study who will be newly infected by M.tuberculosis among the non-infected of the preceding survey during the course of one year.
- It reflects the annual risk of being infected (or reinfected) in a given community, i.e. it expresses the attacking force of tuberculosis in a community.
- It is also known as tuberculin conversion index.
- This parameter is considered one of the best indicators for evaluating the tuberculosis problem and its trend.
 3. Prevalence of disease or case rate

- It is the percentage of individuals whose sputum is *positive for tubercle bacilli on microscopic examination*.
- It is the best available practical index to estimate the number of infectious cases or case load in a community.
- 4. Incidence of new cases
- It is the percentage of new TB cases (confirmed by bacteriological examination) per 1000 population occurring during one year.
- 5. Prevalence of suspected cases
- This is based on X-ray examination of chest.
- 6. Prevalence of drug resistant cases
- It is the prevalence of patient excreting tubercle bacilli resistant to anti-tubercular drugs.
- 7. Mortality rate
- The number of deaths from tuberculosis every year per 1,000 population.

In this question

- Option a → Prevalance of infection.
- Option b → Incidence of infection (annual infection rate).
- Option c → Prevalance of disease (case rate)
- Option d → Incidence of disease.

880. According to immunization schedule, children should receive influenza vaccine ?

- a) 2 doses at 1 month interval
- b) 3doses at 1month interval
- c) 2 doses at one month interval with one booster dose later
- d) None of the above

Correct Answer - C

Ans. is 'c' i.e., 2 doses at one month interval with one booster dose later

- 2 doses of vaccine, separated by an interval of 3-4 weeks are considered necessary to induce satisfactory antibodies level.
- The protective value is 70-90% and immunity lasts for 6-12 months.
- Revaccination on an annual basis is recommended.

Influenza vaccines

1. Killed vaccines

- 2 doses, 3-4 weeks apart, 0.5 ml (for age > 3 years), subcutaneous.
- 70-90% protective efficacy; duration 3-6 months.
- Is rarely associated with Guillain Barre Syndrome (GBS).

2.Live attenuated vaccines

- Stimulate local + systemic immunity.
- Antigenic variations presents difficulties in manufacture.

3.Newer vaccines

- Split - virus vaccine ..
- Also known as 'Sub-virion vaccine'
- Highly purified
- Lesser side effects

- Less antigenic - multiple injections required
- Useful for children o Neuraminidase - specific vaccine :
- Sub-unit vaccine containing N-antigen
- Permits subclinical infection - long lasting immunity
- Recombinant vaccine :
- Antigenic properties of virulent strain transferred to a less virulent strain.
- Contraindications to inactivated influenza vaccines :
- Severe allergy to chicken eggs
- History of hypersensitivity/anaphylactic reactions previously.
- Development of Guillain Bane Syndrome (GBS) within 6 weeks of vaccine.
- Infants less than 6 months age.
- Moderate-to-severe illness with fever

881. The direct BCG vaccination in India is given upto age of-

a) 10 year

b) 15 year

c) 20 year

d) None

Correct Answer - D

Ans. is 'None'

First you should know what does direct vaccination mean **Direct BCG vaccination**

- When BCG vaccination is given *without prior mantoux test*, it is referred as direct BCG vaccination.
- It is recommended *upto 1 year of age*.

Indirect BCG vaccination

- o When BCG vaccination is given *after mantoux test*, it is referred as indirect BCG vaccination.
- It is recommended *beyond the age of 1 year*.

882. Infectivity period of chickenpox is ?

- a) 1 day before and 4 days after appearance of rash
- b) 4 days before and 5 day after appearance of rash
- c) Only when scab falls
- d) Entire incubation period

Correct Answer - A

Ans. is 'a' i.e., 1 day before and 4 days after appearance of rash

Period of communicability:

- Chicken pox: 1 – 2 days before to 4 – 5 days after appearance of rash
- Measles: 4 days before to 5 days after appearance of rash
- Rubella: 7 days before symptoms to 7 days after appearance of rash
- Mumps: 4 – 6 days before symptoms to 7 days thereafter
- Influenza: 1 – 2 days before to 1 – 2 days after onset of symptoms
- Diphtheria: 14 – 28 days from disease onset
- Pertussis: 7 days after exposure to 3 weeks after paroxysmal stage
- Poliomyelitis: 7 – 10 days before and after onset of symptoms
- Hepatitis A: 2 weeks before to 1 week after onset of jaundice
- Hepatitis B: Till disappearance of HBs Ag & appearance of anti-HBs
- Meningococcal: Until absent from nasal and throat discharge
- Tuberculosis: As long as not treated

883. Shortest incubation period is of which infection ?

a) Chicken pox

b) Measles

c) Rubella

d) Influenza

Correct Answer - D
Ans. is 'd' i.e., Influenza

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884. Polio case definition for AFP surveillance ?

- a) Onset of AFP
- b) Residual paralysis
- c) Stool specimen positive for virus
- d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

AFP Surveillance

- Acute flaccid paralysis (AFP) surveillance is carried out to identify all remaining infected areas, monitor progress towards eradication and target supplementary immunization appropriately.
- The term AFP means paralysis of acute onset involving limbs leading to flaccidity. Poliomyelitis is most important etiology of AFP, other causes are - GBS (Guillain-Barre syndrome), transverse myelitis and traumatic neuritis.
- AFP surveillance aims at detecting cases of AFP and reporting them immediately to district immunization officer.
- Surveillance is carried out for all cases of AFP and not just for poliomyelitis. All cases of AFP are reported, regardless of the final diagnosis. As paralytic poliomyelitis is one cause of AFP, maintaining a high sensitivity of AFP reporting will ensure that all cases of paralytic poliomyelitis are detected, reported and investigated, resulting in preventive central measures to interrupt the transmission of disease.
- The aim of AFP surveillance is to detect polio virus transmission, and the earlier the stool is collected, the greater the chance of detecting polio virus.

- WHO recommends the immediate reporting and investigation of every case of AFP in children less than 15 yrs (As AFP in a person > 15 yrs is unlikely to be polio. Still, AFP surveillance must be flexible enough to report any case of AFP in an adult, if suspected to be due to poliomyelitis)
- Cases of AFP are classified as Polio if :
- Wild polio virus is isolated from any stool specimen.
- Cases of AFP without isolation of wild polio virus may be classified as 'polio compatible' if :
- Stool specimens were inadequate and
- Residual weakness was present 60 days after onset of paralysis or 60-day follow-up was not done (due to death or absence) and 'Expert review' concludes that these cases could not be discarded as 'non-polio' based on available data.

885. All are true about polio, except -

a) 99% non paralytic

b) Flaccid paralysis

c) Exaggerated tendon reflexes

d) Aseptic meningitis

Correct Answer - C

Ans. is 'c' i.e., Exaggerated tendon reflexes

o There are absent tendon reflexes (not exaggerated).

o Paralytic polio occurs in only 1% cases (that means 99% is non-paralytic).

o There is flaccid paralysis.

o Aseptic meningitis occurs in 1% of cases.

886. Criteria for defining polio epidemic are all except ?

- a) 2 or more cases
- b) Cases should occur in same locality
- c) Caused by same virus type
- d) Cases occurring during 6 month period

Correct Answer - D

Ans. is 'd' i.e., Cases occurring during 6 month period

o An epidemic of polio is defined as 2 or more local cases caused by same virus type in any 4 week period.

- So, it has following features -

- i) 2 or more cases of polio
- ii) Caused by same virus type
- iii) Within 4 week period

887. In typhoid a permanent carrier is one who excretes bacilli for more than -

a) 3 months

b) 6 months

c) 1 year

d) 3 years

Correct Answer - C

Ans. is 'c' i.e., 1 year

Convalescent **carriers** shed the **bacilli** in feces for three weeks to three months post-infection.

Temporary **carriers** shed the **bacilli** for between three and twelve months, and chronic **carriers** shed the **bacilli for more than one year**

Bacilli persist in the gall bladder or kidney and are eliminated in the feces (fecal carriers) or urine (Urinary carrier), respectively.

o The development of the carrier state is more common in women and in older age groups (over 40 yrs)

o Carriers are the more frequent source of infection than cases.

o **Urinary carriage is less frequent but more dangerous than intestinal carriers.**

o Note —> Permanent carriers are amongst the chronic carriers.

888. All are present in mild dehydration, except ?

a) Thirst

b) Restlessness

c) Dry tongue

d) Normal BP

Correct Answer - C

Ans. is 'c' i.e., Dry tongue

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889. ORS required during first 4 hours in a 20 kg child?

a) 200-400 ml

b) 400-600 ml

c) 600-800 ml

d) 1200-2200 ml

Correct Answer - D

Ans. is 'd' i.e., 1200-2200 ml

- Weight between 16-29.9 kg → ORS requirement is 1200-2200 ml during first 4 hours.

Guidelines for ORS therapy during first four hours

Age	< 4 mth	4-11 mths	1-2 yrs	2-4 yrs	5-14 yrs	15 yrs
Weight (Kg)	< 5	5-7.9	8-10.9	11-15.9	16-29.9	30 or over
ORS (ml)	200-400	400-600	600-800	800-1200	1200-2200	2200-4000

890. Malaria is transmitted in Rural areas by ?

a) Anopheles stephensi

b) Anopheles dirus

c) Anopheles culicifacies

d) None

Correct Answer - C

Ans. is 'c' i.e., Anopheles culicifacies

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891. Most common anopheles mosquito for malaria in India-

a) Anopheles stephensi

b) Anopheles subpictus

c) Anopheles fluviatilis

d) Anopheles dims

Correct Answer - A

Ans. is 'a' i.e., Anopheles stephensi

"Anopheles stephensi is the major malaria vector in India

_____ *Foundation of Community Medicine*

892. Operational efficiency of malaria control programme?

- a) Infant parasite rate
- b) Slide positivity rate
- c) Mosquito bite rate
- d) Annual blood examination rate

Correct Answer - D

Ans. is 'd' i.e., Annual blood examination rate

MEASUREMENT OF MALARIA

- In the pre-eradication era, the magnitude of the malaria problem in a country used to be determined mostly from the reports of the clinically diagnosed malaria cases and the classical malariometric measures, e.g., spleen rate, parasite rate etc.
- On the other hand, during eradication era, the microscopic diagnosis of malaria cases became the main method of diagnosis and the parameters used are mostly parasitological in nature e.g., API, ABER, SPR and SFR.

Measurements of malaria in the pre eradication era

- Spleen rate:
- Defined as the percentage of children between 2 & 10 years of age showing enlargement of spleen. Spleen rate is widely used for measuring the endemicity of malaria in a community.
- Av. enlarged spleen :
- A refinement of spleen rate , denoting the average size of spleen.
- Parasite rate
- Defined as on the percentage of children between the ages of 2 & 10 yrs showing malarial parasites in their blood films.
- Parasite density index

- Average degree of parasitemia
- Infant parasite rate
- Percentage of infants showing malarial parasites in their blood films. It is the most sensitive index of recent transmission of malaria in a locality. If the infant parasite rate is zero for three consecutive years in a locality, it is regarded as absence of malaria transmission even though, the Anopheline vectors responsible for previous transmissions may remain.

Eradication Era

- Annual Parasite Incidence (API)* = (Confirmed cases during one year / population under surveillance) x 1000
- Annual Blood Examination Rate = (No. of slides examined/population) x 100
- ABER is an index of operational efficiency.
- In the modified plan of operation, the minimum prescribed is 10 percent of the population in a year.
- Annual falciparum index
- Slide positivity rate
- Slide positivity rate is the percentage of slides found positive for malarial parasite, irrespective of the type of species.
- Slide falciparum rate
- It is the percentage of slides positive for P. falciparum.

893. Dose of chloroquine at 4-8 year -

a) 150 mg

b) 300 mg

c) 450 mg.

d) 600 mg.

Correct Answer - B

Ans. is 'b' i.e., 300 mg

o 2 tablets of 150 mg are given.

Chloroquine tablests as per age groups

Chloroquine tablets 150 mg base

Age in years	Day 1	Day 2	Day 3
< 1	Y2	'A	1/4
1-4	1	1	'A
5-8	2	2	1
9-14	3	3	1V2
15 & above	4	4	2

Dose of primaquine for P falciparum (single dose) < 1 year

Contraindicated

	1 - 4
years	7.5 mg.
	5 - 8
years	15 mg.
	9 - 14
years	30 mg.

	15
years	45 mg.
<i>Daily dose ofprimaquine for P vivax (for 14 days) < 1 year</i>	
Contraindicated	
	1 - 4
years	2.5 mg
	5 - 8
years	5 mg
	9 - 14
years	10 mg
	15
years	15 mg
Note : Single dose ofprimaquine for P.falciparum is 3 times the daily dose ofprimaquine for P. vivax.	

894. Drug for prophylaxis of malaria in chloroquine resistant *P.falciparum* ?

a) Mefloquine

b) Quinine

c) Halofantrine

d) Artesunate

Correct Answer - A

Ans. is 'a' i.e., Mefloquine

Chemoprophylaxis of malaria

- Chemoprophylaxis is recommended for travellers from non-endemic areas, and as a short term measure for soldiers, police and labour forces serving in highly endemic areas.
- Chemoprophylaxis should begin a week before arrival in malarious area and continued for at least 4 weeks or preferably 6 weeks after leaving malarious area.
- Drugs used are : ?

Chloroquine → DOC for chemoprophylaxis in chloroquine sensitive *P. falciparum* areas.

Atovaquone/Proguanil → Used in areas with chloroquine or mefloquine resistant *P. falciparum*.

Doxycycline → Used in areas with chloroquine or mefloquine resistant *P. falciparum*.

Mefloquine → Used in areas with chloroquine resistant *P. falciparum*

Hydroxychloroquine → Alternative to chloroquine in areas with chloroquine sensitive *P. falciparum*

895. An Englishman travels to a place which is resistant to chloroquine and mefloquine. What should he take as prophylaxis ?

a) Primaquine

b) Hydrochloroquine

c) Proguanil

d) Artesunate

Correct Answer - C
Ans. is 'c' i.e., Proguanil

896. All are features of yellow fever except ?

- a) IP 3-6 days
- b) 1 attack gives life long immunity
- c) Caused by vector aedes
- d) Validity of vaccination begins immediately after vaccination

Correct Answer - D

Ans. is 'd' i.e., Validity of vaccination begins immediately after vaccination

Yellow fever

- Yellow fever is a zoonotic disease caused by an arbo-virus.
- It affects principally monkeys.
- Agent → Flavivirus fibricus a group B arbovirus of togavirus family.
- Vector → Aedes aegypti mosquito.
- Reservoir → Monkeys and forest mosquitoes. Transsaharian transmission of the virus in mosquitoes has been shown to occur in adverse conditions (e.g., during extended dry seasons), in the absence of susceptible hosts. o There is no evidence that yellow fever has ever been present in Asia.
- Environmental **factor for yellow fever**.
- A temperature of 24°C or more is required for the multiplication of the virus in the mosquito.
- It should be accompanied by a relative humidity of over 60% for the mosquitoes to live long.
- Urbanization is leading to extension of yellow fever in Africa.
- Measures designed to restrict the spread of yellow fever are specified in the "International health regulation" of WHO.
- These are implemented by the Govt of India through stringent aerial and maritime traffic regulations.

- Broadly these comprise : -
 - i. Travellers**
 - All travellers (including infants) exposed to yellow fever or passing through endemic zones of yellow fever must possess a valid international certificate of vaccination against yellow fever before they are allowed to enter yellow fever receptive areas like India.
 - The validity of the certificate begins 10 days after the date of vaccination and extends up to 10 years.
 - Revaccination performed before the end of the validity of certificate renders the certificate valid for a further period of 10 years starting on the day of revaccination.
 - If no such certificate of vaccination is available, the traveller is placed on quarantine for 6 days from the date of leaving an infected area.
 - ii. Mosquitoes**
 - The aircraft and ships arriving from endemic areas are subjected to aerosol spraying with prescribed insecticides.
 - Airports and Seaports are kept free from the breeding of insect vectors over an area extending at least 400 metres around their perimeters.
 - The "aedes aegypti index" is kept below 1.

897. The international quarantine period for yellow fever as approved by the Government of India is ?

a) 6 days

b) 9 days

c) 10 days

d) 12 days

Correct Answer - A

Ans. is 'a' i.e., 6 days

o Quarantine period --> 6 days from the date of leaving an infected area.

o Validity of certificate —> Starts 10 days after the date of vaccination.

898. The distance from airport or seaport which has to be free from mosquitoes is

-

a) 400m

b) 500m

c) 1 km

d) 100m

Correct Answer - A
Ans. is 'a' i.e., 400 m

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899. All of the following are related to plague except ?

a) Aedes aegypti index

b) Total flea index

c) Burrow index

d) Cheopis index

Correct Answer - A

Ans. is 'a' i.e., Aedes aegypti index

- Aedes aegypti index is used for yellow fever.
- In plague, flea indices are used.

Flea indices

- Flea indices are useful measurements of the density of fleas.
- They are also useful in evaluating the effectiveness of a spraying programme.
- The following indices are widely used in rat flea surveys : -
 1. Total flea index → It is the average number of fleas of all species per rat.
 2. Cheopis index → It is the average number of X. cheopis per rat. It is a specific flea index, so it is a more significant index than total flea index. If this index is more than one, it is regarded as indicative of potential explosiveness of the situation, should a plague outbreak occur.
 3. Specific percentage of fleas → It is the percentage of different species of fleas that are found on rats.
 4. Burrow index → It is the average number of free - living fleas per species per rodent burrow.

900. Concentration of diethylcarbomazine in DEC medicated salt in endemic filariasis is

a) 2-4 gm/kg

b) 3-6 gm/kg

c) 5- 10 gm/kg

d) 10- 15 gm/kg

Correct Answer - A

Ans. is 'a' i.e., 2-4 gm/kg

- o The use of DEC-medicated salt is a special form of mass treatment using very low doses of drug over a long period of time.
- o Common salt medicated with *1-4g of DEC per kg* has been used for filariasis control in endemic areas of *W. bancrofti* and *B malayi*, particularly in Lakshadweep islands.
- o Treatment should be continued for at least *6-9 months*.

901. Rash is absent in ?

a) Scrub typhus

b) Epidemic typhus

c) Q. fever

d) Endemic typhus

Correct Answer - C

Ans. is 'C' i.e., Q. fever

Q fever is caused by the bacterium *Coxiella burnetii*, commonly found in sheep, goats and cattle. The bacterium can also infect pets, including cats, dogs and rabbits.

These animals transmit the bacteria through their urine, feces, milk and birthing products — such as the placenta and amniotic fluid. When these substances dry, the bacteria in them become part of the barnyard dust that floats in the air. The infection is usually transmitted to humans through their lungs, when they inhale contaminated barnyard dust, the organism can also gain entry into the body, through abrasions, conjunctivae or ingestion of contaminated food.

Q fever is usually a mild disease with flu-like symptoms. In acute onset fever, chills, general malaise and headache, There is no rash or local lesion.

Rare complications includes

Endocarditis. endocarditis can severely damage your heart valves. Endocarditis is the most deadly of Q fever's complications.

Lung issues. Some people who have Q fever develop pneumonia. This can lead to acute respiratory distress.

Liver damage. Some people who have Q fever develop hepatitis.

Encephalitis.

Prevention can be done by Pasteurization

Prevention can be done by Pasteurisation

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902. Based on the type of life cycle, zoonoses are classified into all of the following except -

a) Cyclo-zoonoses

b) Meta-zoonoses

c) Anthroozoonoses

d) Sporozoonoses

Correct Answer - C

Ans. is 'c' i.e., Anthroozoonoses

Classification of zoonoses

1) *Based on direction of transmission* : (i) Anthroozoonoses, (ii) Zoonthroponoses, and (iii) Amphixenoses

2) *Based on type of life cycle* : (i) Direct zoonoses, (ii) Cyclo-zoonoses, (iii) Meta-zoonoses, and (iv) Sporozoonoses.

903. All of the following are anthroponosis except

a) Rabies

b) Plaque

c) Anthrax

d) Schistosomiasis

Correct Answer - D

Ans. is 'd' i.e., Schistosomiasis

Zoonoses

- Zoonoses are diseases and infections which are naturally transmitted between vertebrate animal and man.
- The zoonoses may be classified according to the direction of transmission of disease : ?

1. Anthroponoses

- Infection is transmitted to man from lower vertebrate animals.
- Examples -4 *Rabies, plague, hydatid disease, anthrax, trichinosis.*

2. Zoonthronoses

- Infection is transmitted from man to lower vertebrate animals
- Examples → *Human tuberculosis in cattle*

3. Amphixenoses

- Infection is maintained in both man and lower vertebrate animals that may be transmitted in either direction.
- Examples *T cruzi, S. japonicum.*

904. To achieve neonatal tetanus elimination, incidence of neonatal tetanus per 1000 live births should be reduced to less than -

a) 0.1

b) 02

c) 0.5

d) 1.0

Correct Answer - A

Ans. is 'a' i.e., 0.1

o Districts are being classified into three categories, depending on neonatal tetanus incidence rate, immunization coverage in pregnant women, and proportion of clean deliveries by trained personnel.

1. *Neonatal tetanus high risk* : -

o NT incidence rate $> 1/1000$ live births

or

TT2 coverage $< 70\%$

or

Attended deliveries $< 50\%$

2. *Neonatal tetanus control*

NT incidence rate $< 1/1000$ live birth

or

TT2 coverage $> 70\%$.

or

Attended deliveries $> 50\%$.

3. *Neonatal tetanus elimination*

NT incidence rate $< 0.1/1000$ live birth

or

TTC coverage > 90%.

or

Attended deliveries > 75%

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905. If a claw hand develops in a patient with Leprosy, the deformity is ?

a) Grade 0

b) Grade I

c) Grade II

d) Grade III

Correct Answer - C
Ans. is 'c' i.e., Grade II

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906. Pre-exposure prophylaxis dose schedule for rabies vaccine given in all days except ?

a) Day 0

b) Day 3

c) Day 7

d) Day 28

Correct Answer - B

Ans. is 'b' i.e., Day 3

Prevention of rabies

- Prevention of rabies may be of following types
- Post exposure prophylaxis
- Preexposure prophylaxis
- Post-exposure treatment of persons who have been vaccinated previously.

Schedules of vaccination for post exposure prophylaxis

A. Intramuscular schedules

- Routine shedule → 6 doses on 0, 3, 7, 14 and 28 days with a booster on day 90.
- Abbreviated multisite schedule -4 2-1-1 regimen one dose is given in the right arm and one in left arm on day 0 after that one dose is given on day 7 and 21.

B. Intradremal schedules

- 2-site intradermal schedule One dose of vaccine is given at each of two sites on days 0, 3, 7 and 28.
- 8-site intradermal schedule → On day "0" vaccine is give at 8 sites, on day 7 vaccine is given at 4 sites, and on days 28 and 90 vaccine

is given at one site.

Pre-exposure prophylaxis

- Persons who run a high risk of repeated exposure such as laboratory staff working with rabies virus, veterinarian, animal handlers and wild -life officers should be protected by pre-exposure immunization.
- Cell-culture vaccine given on days 0, 7 and 21 or 28 (Total 3 doses)
- Further booster should be given at intervals of 2 years.

In post-exposure prophylaxis of immunized patient

- 2 day intradermal regimen (1 site) → Day 0 and day 3
- Intramuscular regimen → Day 0
- 4 site intradermal regimen_ (single-visit) → Day 0

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907. SA-14-14-2 ?

a) Diploid cell inactivated

b) Killed vaccine

c) Live vaccine

d) Primary immunization 2 doses

Correct Answer - C

**Ans. is 'c' i.e., Live vaccine[Ref Park 22nd ed p. 260,261;
Environmental medicine p.1812]**

SA-14-142 is a cell-culture-derived live attenuated vaccine for IE.
Primary immunization is given by a single dose followed by a
booster after 1 years.

I am not sure about option c, because no textbook has mentioned
whether, SA-14-14-2 vaccine provides life long immunity or not. But,
almost all live attenuated vaccines provide life long immunity,
therefore it may provide life long immunity.

"Protection for 10-12 years may be achieved with a single dose of
this vaccine".

908. Most effective natural barrier to rabies

a) Heat

b) Humidity

c) Water

d) None

Correct Answer - C

Ans. is 'c' i.e., Water

- Rabies is primarily a zoonotic disease of warm-blooded animals, particularly carnivorous such as dogs, Cats, Jackals and wolves.
- It is transmitted to man usually by bites or licks of rabid animals.
- It is the communicable disease which is always fatal.
- Rabies is an enzootic and epizootic disease of world-wide importance.
- Geographic boundaries play an important role in the distribution of rabies.
- Water appears to be the most effective natural barriers to rabies → So, In India, Lakshadweep and Andman & Nicobar islands are free of the disease.
- A Rabies free area has been defined as one in which no case of indigenously acquired rabies has occurred in man or any animal species for 2 years.
- Countries where rabies is not found → Australia, china (Taiwan), Cyprus, Iceland, Ireland, Malta, Japan, Newzealand, Britain.

909. Maximum density of microfilarias in blood is reported to be between -

a) 9 pm to 11 pm

b) 11 pm to 2 am

c) 8 pm to 10 pm

d) 2 am to 5 am

Correct Answer - B

Ans. is 'B' i.e., 11 pm to 2 am

The microfilaria of *W. bancrofti* and *B. malayi* occurring in India display a nocturnal periodicity, i.e., they appear in large numbers at night and retreat from the bloodstream during the day.

This is a biological adaptation to the nocturnal biting habits of vector mosquitoes.

The maximum density of microfilaria in the blood is reported between 10 pm and 2 am.

When the sleeping habits of the host are altered, a reversal in periodicity has been observed.

910. Night blood survey is done in ?

a) Filaria

b) Typhoid

c) Malaria

d) Kala-azar

Correct Answer - A

Ans. is 'a' i.e., Filaria

- The microfilariae of *W. bancrofti* and *B. malayi* occurring in India display a nocturnal periodicity, i.e., they appear in large number at night and retreat from the blood stream during the day.
- This is a biological adaptation to the nocturnal biting habits of vector mosquitoes.
- The maximum density of microfilariae in blood is reported between 10 pm and 2am.
- When the sleeping habits of the host are altered, a reversal in periodicity has been observed

911. *D.latum* transmitted by ?

a) Cercaria through cyclops

b) Cercaria through fish meal

c) Plerocercoid through fish meal

d) Metacercaria in cyclops

Correct Answer - C

Ans. is 'c' i.e., Plerocercoid through fish meal

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912. Disease not covered under Integrated disease surveillance project (IDSP) is ?

a) Meningococcal disease

b) Tuberculosis

c) Herpes zoster

d) Cholera

Correct Answer - C

Ans. is 'c' i.e., Herpes zoster

Integrated disease surveillance project (IDSP)

- IDSP is a decentralized *state based* surveillance system intended to detect early warning signals of impending outbreaks and helps initiate an effective response in a timely manner in urban and rural areas.
- It will also provide essential data to monitor progress of on-going disease control programme and help allocate health resources more efficiently.
- It is a 5 years project and was launched in November 2004.
- The core conditions under surveillance in IDSP are:
 - A. Regular Surveillance
- Vector borne disease -^p Malaria
- Water borne disease -3 Acute diarrheal disease (cholera), Typhoid
- Respiratory disease → TB
- Vaccine preventable disease Measles
- Disease under eradication → Polio
- Other conditions → Road traffic accidents
- Other international commitments Plague
- Unusual clinical syndromes *Men* ingoencephalitis, Respiratory distress, hemorrhagic fever

- B. Sentinel surveillance
 - STD/blood borne disease -^p HIV/HBV, HCV, water quality monitoring
 - Other conditions → Outdoor air quality
- C. Regular periodic surveys
 - NCD risk factors → Anthropometry, Physical activity, BP, tobacco, nutrition
- D. Additional state priorities
 - Each state may identify up to five additional conditions for surveillance.
 - These are (above described) are the conditions (diseases) which are under surveillance in IDSP. There are some clinical syndrome under surveillance in IDSP to pick up all priority diseases listed in regular surveillance (above)
 - 1. Fever with or without localizing signs: Malaria, Typhoid, JE, Dengue, Measles
 - 2. Cough more than 3 weeks: TB
 - 3. Acute flaccid paralysis: Polio
 - 4. Diarrhea: Cholera
 - 5. Jaundice: Hepatitis, leptospirosis, Dengue, Malaria, Yellow fever
 - 6. Unusual syndromes: Anthrax, plague, emerging epidemics.

913. Antiserum is available for passive immunization against ?

a) Rabies

b) Typhoid

c) Meales

d) Mumps

Correct Answer - A

Ans. is 'a' i.e., Rabies

For passive immunization

A. Antiserum

- Rabies
- Tetanus
- Diphtheria

B. Human normal immunoglobulins

- Rabies
- Tetanus
- Hepatitis A
- Measles
- Mumps

C. Human specific immunoglobulins

- Diphtheria
- Hepatitis B
- Varicella

914. Oncherciasis elimination, operational definition ?

- a) O.volvulus transmission has reduced below a particular point
- b) Intervention has stoped
- c) No recrudescence
- d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Oncherciasis elimination

- The reduction of infection and transmission to the extent that interventions can be stopped, but post-intervention surveillance is still necessary.
- Operational definition includes ?
- Intervention have reduced O.volvulus infection and transmission below the point where the parasite population is beilved to be irreversibly moving to its demise/extinction in a defined geographical area.
- Intervention have been stopped.
- Post-interventional surveillance for an appropriate period has demonstrated no recrudescence of transmission to a level suggesting recovery of O.volvulus population.
- Additional surveillance is still necessary for timely detection of recurrent infection, if a risk of reintroduction of infection from other area remains.

915. Transovarian transmission is seen in-

a) Rickettesial diseases

b) Malaria

c) Filaria

d) None

Correct Answer - A

Ans. is 'a' i.e., Rickettesial diseases

o Transovarial transmission is seen in Rickettesial disease (scrub typhus, Rickettsial pox, RMSF, ITT, Q fever).

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916. A person is obese if he has weight for height

- a) 1 SD from median weight for height
- b) 2 SD from median weight for height
- c) 3 SD from median weight for height
- d) None

Correct Answer - B

Ans. is 'b' i.e., 2 SD from median weight for height

Obesity

- Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy.
- Body mass index (BMI) is used to define obesity.
- BMI define a person overweight when his BMI is between 25 - 30 kg/m² and obese when his BMI is greater than 30 kg/m².
- Body weight, though not an accurate measure of excess fat, is a widely used index.
- In epidemiological studies it is conventional to accept +2SD (standard deviations) from the median weight for height as a cut-off point for obesity.

917. Descending order of cancer prevalence in males?

a) Lung > oral > pharynx > esophagus

b) Oral > lung > pharynx > esophagus

c) Pharynx > lung > oral > esophagus

d) Esophagus > oral > stomach > lung

Correct Answer - B

Ans. is 'b' i.e., Oral > lung > pharynx > esophagus

- Most common cancer in males in India is oral cancer followed by lung cancer.
- *Cancers in decreasing order in males (in India) : Oral cavity > Lung > Pharynx > Esophagus > Stomach.*
- Note : Some textbooks have mentioned that lung cancer is the most common cancer in men in India, followed by oral cavity cancer as the 2nd most common cancer. But most of the textbooks have mentioned oral cavity as the most common site of cancer in men in India. So, according to me oral cavity is the most common site.
- *Cancers in decreasing order in females (in India) : cervix > breast > ovary cavity > esophagus.*

Most common cancer in males in India → Oro-pharyngeal Ca (Aero-digestive Ca).

Most common cancer in males in world → Lung Ca.

Most common cancer in females in India → Cervical cancer.

Most common cancer in females in world → Breast Ca.

Most common overall cancer in the world (combined male & female) → Lung cancer.

Most common cancer related death in males in India & in world →

Ca lung.

Most common cancer related death in females in India & in world

→ Breast cancer.

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918. CAD primordial prevention is by?

- a) Lifestyle change
- b) Coronary bypass
- c) Treatment of CAD
- d) None

Correct Answer - A

Ans. is 'a' i.e., Lifestyle change [Ref Park 22nd ed p. 339-341]

Primordial/primary prevention is the best policy for CHD as well as other non-communicable diseases. It includes following :

1. Change in life style
2. BP monitoring
3. Salt restriction
4. Exercise
5. Dietary modification (prudent diet)

919. Preobesity is defined as a BMI of:

a) 18.5-24.9

b) 25-29.9

c) 35-39.9

d) 40-44.9

Correct Answer - B

Ans. B: 25-29.9

BMI is an estimate of total body fat mass and is probably the most useful scale to define obesity. Obesity has been defined as a BMI $>30.0 \text{ kg/m}^2$ in the World Health Organization (WHO) classification. Body mass index (BMI), calculated from measured weight and height, was classified using the World Health Organization categories of underweight (BMI $< 18.5 \text{ kg/m}^2$), normal weight (BMI 18.5 to 24.9 kg/m^2), pre-obesity (BMI 25 to 29.9 kg/m^2) and obesity (BMI $30+ \text{ kg/m}^2$).

920. What is the BMI for an obese person:

a) Less than 18.5

b) 18.5-24.9

c) 25-29.9

d) More than 30

Correct Answer - D

Ans. D: More than 30

BMI is an estimate of total body fat mass and is probably the most useful scale to define obesity. Obesity has been defined as a BMI $>30.0 \text{ kg/m}^2$ in the World Health Organization (WHO) classification. Body mass index (BMI), calculated from measured weight and height, was classified using the World Health Organization categories of underweight (BMI $< 18.5 \text{ kg/m}^2$), normal weight (BMI 18.5 to 24.9 kg/m^2), pre-obesity (BMI 25 to 29.9 kg/m^2) and obesity (BMI $30+ \text{ kg/m}^2$).

921. Natural family planning method ?

a) Abstinence

b) Coitus interruptus

c) BBT

d) Safe period

Correct Answer - C

Ans. is 'c' i.e., BBT

Miscellaneous methods of contraceptions

- These are (i) Abstinence, (ii) Coitus interruptus, (iii) Safe period (rhythm method), and (iv) Natural family planning methods.
- Abstinence
- There is complete abstinence from sexual intercourse. It is not used and can hardly be considered as a method of contraception to be advocated to the masses.
- Coitus interruptus
- It is the oldest method of voluntary fertility control. The male withdraws before ejaculation, and thereby tries to prevent deposition of semen into vagina. Failure rate is very high 25%.
- Natural family planning methods
- These are :?
 1. Basal body temperature (BBT) method : It is based on the principle that there is rise BBT at or just before ovulation.
 2. Cervical mucus method (Billings method or ovulation method) : It is based on the observation that at the time of ovulation cervical mucus becomes watery clear resembling raw egg white, smooth, slippery and profuse.
 3. Symptothermic method : This method combines temperature, cervical mucus and safe period (calendar method) methods.

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922. Unmet needs of contraception to met according to NFH S-3

- a) Women < 20 years
- b) Women after puerperium
- c) Women after 1' week delivery
- d) After illegal abortion

Correct Answer - A

Ans. is 'a' i.e., Women < 20 years

- Many women who are sexually active would prefer to avoid pregnancy, but nevertheless are not using any method of contraception.
- These women are considered to have 'unmet need' for family planning.
- The concept is usually applied to married women.
- According to the National Family Health Survey-3, Unmet need for family planning is highest (27.1%) among women below 20 years age and is almost entirely for spacing the births rather than for limiting the births.
- It is also relatively high for women in age group 20-24 years (21.1%) with 75% need for spacing and 25% for limiting the birth.
- Unmet need for contraception among women aged 30 years and above are mostly for limiting birth.

Age group Unmet need of contraception for

< 20 years For spacing the birth

20-24 years For spacing (75%) and for limiting birth (25%)

30 years For limiting birth

923. All of the following are postcoital contraception methods except-

a) Mifepristone

b) IUD

c) Levonorgestrol

d) Barrier methods

Correct Answer - D

Ans. is 'd' i.e., Barrier methods

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924. If annual growth rate of a population is 1.5-2%, what number of years will be required to double the population?

a) 70-47 years

b) 47-35 years

c) 35-28 years

d) 28-23

Correct Answer - B
Ans. is 'b' i.e. 47-35 years

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925. Population explosion (explosive growth) is defined as the growth rate ?

a) 0.5-1.0

b) 1-1.5

c) 1.5-2

d) > 2

Correct Answer - D

Ans. is 'd' i.e., > 2

Rate/Phase

Stationary population

Slow growth

Moderate growth

Rapid growth

Very Raped growth

Explosive growth

Annual rate of
growth in %

No growth <5

0.5 to 0.1

1.0 to 1.5

1.5 to 2.0

> 2.0

926. Copper T is ideally inserted at-

a) Just before menstruation

b) On the 26th day

c) Just after menstruation

d) On the 14th day

Correct Answer - C

Ans. is 'c' i.e., Just after menstruation

Timing of insertion

Although the loop can be inserted at almost anytime during a woman's reproductive years (except during pregnancy), *the most propitious time for loop insertion is during menstruation or within 10 days of the beginning of a menstrual period.*

- o During this period, insertion is technically easy because the diameter of the cervical canal is greater at this time than during the secretory phase.

- o The uterus is relaxed and myometrial contractions which might tend to cause expulsion are at a minimum.

- o In addition, the risk that a woman is pregnant is remote at this time.

927. Population pyramid indicates ?

a) Life expectancy

b) Fertility pattern

c) Sex ratio

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Population pyramid

- The age and sex distribution of a population is best represented by population pyramid
- In countries with high birth rates as ours, it is broad based conical pyramid because of high birth rate and tapering of population with increase in age.
- In developed countries with low birth rate, the pyramid swells in the middle and is narrow at the base and is not so conical at the top. (*dumb bell shaped*).

Utility of population pyramid

- Shape of population pyramid indicates fertility pattern
- .. Broad base, Narrow top (upright triangle): High proportion of younger population (developing countries)
- 2. Bulge in Middle: High proportion of adults (developed countries)
- Span (height) of population pyramid indicates life expectancy
- .. Taller pyramid: Higher life expectancy (developed countries)
- 2. Shorter pyramid: Lower life expectancy (developing countries)
- Symmetry of population pyramid indicates sex ratio
- .. Symmetric pyramid: ideal sex ratio (developed countries)
- 2. Asymmetric pyramid: unfavourable sex ratio <1000 (developing countries)

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928. Pearls index?

a) Per 100 woman years

b) Per 10 woman years

c) Per 1000 woman years

d) Per 50 woman years

Correct Answer - A

Ans. is 'a' i.e., Per 100 woman years

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929. Infant mortality rate in India is, per 1000 live births?

a) 25

b) 34

c) 55

d) 60

Correct Answer - B

Ans. is 'b' i.e., 34

The value for Mortality rate, infant (per 1,000 live births) in India was 37 as of 2015.

IMR of India has declined by three points (8% decline), from 37 per 1000 live births in 2015 to 34 per 1000 live births in 2016.

930. Present "General fertility rates" ?

a) 84

b) 118

c) 128

d) 138

Correct Answer - A
Ans. is 'a' i.e., 84

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931. "Second" most common cause of maternal mortality in India is ?

a) Toxemia

b) Anemia

c) Maternal hemorrhage

d) Sepsis

Correct Answer - B

Ans. is 'b' i.e., Anemia

Most common cause → Severe bleeding (25%).

Second most common cause → Anemia (19%).

Third most common cause → Infection/Sepsis (15%).

Direct cause of maternal mortality in India

- Severe bleeding (25%)
- Infection (15%)
- Eclampsia (12%)
- Obstructed labour (8%)
- Unsafe abortion (13%)
- Other direct causes → Ectopic pregnancy, Embolism, Anaesthesia related.

Indirect causes contribute

- Anaemia (19%)
- Malaria
- Heart diseases

932. Quarter of postnatal mother death is caused by ?

a) Infection

b) Bleeding

c) Eclampsia

d) Anemia

Correct Answer - B

Ans. is 'b' i.e., Bleeding

o 25% of maternal death are caused by severe bleeding, generally occurring post-partum.

933. Maximum maternal mortality during peripartum period occurs at -

- a) Last trimester
- b) During labor
- c) Immediate post-partum
- d) Delayed post-partum

Correct Answer - C

Ans. is 'c' i.e., Immediate post-partum

o Studies show that mortality risks for mother are particularly elevated in the first two days after birth, i.e. immediate post-partum period.

o A women is most vulnearble at post-partum period. About 50-70% maternal death occuring in the post-partum period of which 45% deaths occur in first 24 hours after delivery and more than two-third druing the first week.

934. All of the following are required more during lactation as compared to pregnancy, except ?

a) Iron

b) Vitamin A

c) Niacin

d) Energy

Correct Answer - A

Ans. is 'a' i.e., Iron

- Required more during lactation as compared to pregnancy : Energy, Vitamin A, thiamin, riboflavin, Vitamin C, niacin, and Vitamin B12.
- Required more during pregnancy : Iron, protein, and folate.
- Same requirement in pregnancy and lactation : Fat, calcium, zinc, magnesium, and vitamin B6.

935. Denominator for calculating perinatal mortality rate is:
September 2009

a) 1000 births

b) 1000 live births

c) 1000 still births

d) 1000 population

Correct Answer - B

Ans. B: 1000 live births

164. Perinatal mortality, defined as number of stillbirths (28 weeks of gestation and more) and deaths in the first week of life (early neonatal deaths) per 1,000 live births, is a useful additional indicator, and work is ongoing to improve estimates of stillbirth rates, a major component of perinatal mortality.

936. Most common cause of infant mortality?

a) LBW

b) Injury

c) ART

d) Tetanus

Correct Answer - A
Ans. is 'a' i.e., LBW

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937. Maximum calcium is seen in -

a) Jowar

b) Bajara

c) Ragi

d) None

Correct Answer - C

Ans. is 'c' i.e., Ragi

Millets

o The term "millet" is used for smaller grains : -

i) Jowar (Sorghum)

ii) Bajara (Pearl millet)

iii) Ragi

o Amongst millets

*Maximum protein**Maximum fat**Maximum carbohydrate**Maximum minerals & Calcium**Maximum vit B complex**Maximum energy**Maximum iron**Bajra**Bajra**Jowar**Ragi**Jowar**Bajra**Bajra*

938. Iron requirement in a normal menstruating adult female

a) 15 mg/day

b) 20 mg/day

c) 30 mg/day

d) 35 mg/day

Correct Answer - B
Ans. is 'b' i.e., 20 mg/day

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939. Which nut has highest protein content -

a) Walnut

b) Groundnut

c) Almond

d) Coconut

Correct Answer - B

Ans. is 'b' i.e., Groundnut

o Nuts commonly consumed in India are coconut, groundnut, cashew nut, walnut and almond. o Groundnut has maximum protein contents.

o There is no need to remember this table. I am summarizing it for you.

- *Groundnut has maximum protein and Carbohydrate.*

Coconut has minimum protein.

Walnut has maximum fat.

Groundnut has minimum fat.

o *Almond has minimum carbohydrate.*

Almond has maximum minerals.

Coconut has minimum minerals.

940. Richest source of vitamin D is:
September 2003

a) Fish

b) Soyabean

c) Halibut liver oil

d) Vegetables

Correct Answer - C
Ans. C i.e. Halibut liver

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941. The highest concentrations of Vitamin A is seen in -

a) Polar bear liver

b) Cod liver oil

c) Shark liver oil

d) Papaya

Correct Answer - B

Ans. is 'b' i.e., Codliver oil

Amongst the given options, cod liver oil has highest concentration.

942. One criteria for prudent diet?

- a) Fat intake 35-40% of total energy
- b) Dietary cholesterol < 300 mg/1000Kcal per day
- c) Salt intake <10 g/day
- d) Saturated fats < 10% of total energy

Correct Answer - D

Ans. is 'd' i.e., Saturated fats < 10% of total energy

Dietary goals prescribed by WHO expert committee prudent diet

- 3 Dietary modification is the principal preventive strategy in the prevention of CHD. The WHO Expert Committee (1) considered the following dietary changes to be appropriate for high incidence populations.
- Reduction of fat intake to 20-30 percent of total energy intake
- Consumption of saturated fats must be limited to less than 10 percent of total energy intake, some of the reduction in saturated fat may be made up by mono and poly-unsaturated fats.
- A reduction of dietary cholesterol to below 100 mg per 1000 kcal per day.
- An increase in complex carbohydrate consumption (i.e. vegetables, fruits, whole grains and legumes)
- Avoidance of alcohol consumption, reduction of salt intake to 5 g daily or less.

Other specific interventions as part of primordial prevention of coronary heart disease

- To achieve a smoke free society
- Reduction of Blood pressure through prudent diet. Regular exercise, weight control & cessation of smoking.

- Regular Physical Activity.

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943. In rural area, cattle sheds should be away from the houses ?

a) 5 feet

b) 10 feet

c) 20 feet

d) 25 feet

Correct Answer - D

Ans. is 'd' i.e., 25 feet

Rural housing

- In rural areas, the 'approved' standards may be lower than in towns.
- The following minimum standards have been suggested :
- There should be at least two living rooms.
- Ample verandah space may be provided.
- The built-up area should not exceed one-third of the total area.
- There should be a separate kitchen with a paved sink or platform for washing utensils.
- The house should be provided with a sanitary latrine.
- The window area should be at least 10 percent of the floor area.
- There should be a sanitary well or a tube well within a quarter of a mile from the house.
- It is insanitary to keep cattle and livestock in dwelling houses. Cattle sheds should be at least 25 feet away from dwelling houses. A cattle shed should be open on all sides; an area 8 ft 4 ft is sufficient for each head of cattle.
- There should be adequate arrangement for the disposal of waste water, refuse and garbage.

944. Criteria for slaughter house ?

a) Glass area should be 25% of floor area

b) Window ledes sloped 25°

c) Doorways 1 meter high

d) None of the above

Correct Answer - A

Ans. is 'a' i.e., Glass area should be 25% of floor area

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945. Most common cause of pollution of drinking water

- a) Domestic waste
- b) Industrial waste
- c) Radioactive substances
- d) Agricultural pollutants

Correct Answer - B

Ans. is 'b' i.e., Industrial waste

o Two most common causes of water pollution

i) *Domestic sewage*

ii) *Industrial wastes*

Among these two industrial wastes are the most common

946. Psychrometer Psychrometer is used to measure -

a) Humidity

b) Air velocity

c) Room temperature

d) Radiant temperature

Correct Answer - A

Ans. is 'a' i.e., Humidity

Humidity is measured by

o Dry and wet Bulb hygrometer

o Sling psychrometer

o Assmann psychrometer

o Air velocity is measured by *anemometer*.

o *Radiant temprature* is measured by *Globe thermometer*. o *Room temprature* is measured by *bulb thermometer*.

947. True about slow sand filter is

- a) Occupies less space
- b) More expensive
- c) Requires longer duration
- d) Sand size 0.4 - 0.7 mm

Correct Answer - C

Ans. is 'c' i.e., Requires longer duration

The slow sand filter requires more time (duration).

The size of the sand is smaller (0.2-0.3 mm).

Slow sand filter occupies a large area (more space).

The cost of construction is cheaper for the slow sand filter.

948. Minimum contact period required during Chlorination?

a) 30 minutes

b) 1 hrs.

c) 2 hrs

d) 4 hrs

Correct Answer - B

Ans. is 'b' i.e., 1 hrs.

Principles of chlorination

- Water should be clear and free from turbidity. Turbidity impedes efficient chlorination.
- The chlorine demand of the water should be estimated. It is the amount of chlorine that is needed to destroy bacteria and to oxidize all the organic matter and ammoniacal substances present in water. Chlorine demand of water is the difference between the amount of chlorine added to the water and the amount of residual chlorine remaining at the end of a specific period of contact (usually 60 minutes) at a given temperature and pH of the water.
- The point at which the chlorine demand of the water is met is called breakpoint chlorination. If further chlorine is added beyond breakpoint, free chlorine begins to appear in water.
- The presence of free residual chlorine for a contact period of at least one hour is essential to kill bacteria and viruses.
- The minimum recommended concentration of free chlorine is 0.5mg/l for one hour. This free residual chlorine provides a margin of safety against subsequent microbial contamination.
- The sum of the chlorine demand of the specific water plus the free residual chlorine of .5 mg/L constitutes the correct dose of chlorine

to be applied.

- It is worth noting here that recommended residual chlorine level for drinking water is 0.5 mg/ litre, while for swimming pool sanitation it is 1.0 mg/ litre and for water bodies & post disaster it is 0.7 mg/litre.

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949. Sandfly transmits all, except ?

a) Oriental sore

b) Leishmaniasis

c) Kala-azar

d) Relapsing fever

Correct Answer - D

Ans. is 'd' i.e., Relapsing fever

Sandfly:?

- Habitats: Holes and crevices in walls, holes in trees, dark rooms, stables, and storerooms.
- Sanitation measures are carried out for a distance of 50 feet.
- Insecticide of choice: DDT (1 -2 gm/m² single application)
- DDT is sprayed up to a height of 4 - 6 feet of walls^Q: as Sandfly cannot fly, it only hops

Sandfly

Sandfly species

Diseases transmitted

Phlebotomus

Kala-azar (Visceral Leishmaniasis)

argentipes

Phlebotomus

Sandfly fever, Oriental sore (Cutaneous Leishmaniasis)

papatasi

Phlebotomus sergenti

Oriental sore (Cutaneous Leishmaniasis)

Sergentomyia

Sandfly fever

punjabensis

950. All insects have developed resistance to DDT except?

a) Mosquito

b) Flea

c) Tsetse flies

d) Ticks

Correct Answer - C

Ans. is 'c' i.e., Tsetse flies

Arthropods showing resistance to DDT → Arthropods showing no resistance to DDT

Houseflies (e.g., <i>Musca domestica</i>)	Sandflies (<i>Phlebotomus</i>)

Moquito (<i>Culex</i> , <i>Anopheles</i> , <i>Aedes</i>)	Tsetse flies (<i>Glossinidae</i>)

Flea (rat flea, Sand flea)

Lice (*Pediculus capitis/corporis*, *Phthirus pubis*)

Ticks & Mites

951. Which of the following is a stomach poison ?

a) DDT

b) Pyrethrum

c) Paris green

d) Malathion

Correct Answer - C

Ans. is 'c' i.e., Paris green [Ref Park 22nd ed p. 728]

Insecticides are divided into :?

1. Fumigants : Hydrogen cyanide, SO₂, methyl bromide, carbon disulphate.
2. Stomach poisons : Paris green, Sodium fluoride.
3. Contact (nerve) poisons : These are divided into
4. Natural : Pyrethrum, rotenone, Derris, nicotine, mineral oil.

Synthetic : These are

- Organophosphates : Malathion, parathion, fenthion, diazinon, fenitrothion, abate, chlorthion, dioxathion, chlorpyrifos, trichlorfon.
- Carbamates : Carbaryl, propoxur, dimetilan, pyrolon.
- Organochlorine : DDT, BHC (HCH), dieldrin, aldrin, chlordane, lindane, heptachlor.
- Synthetic pyrethroid (pyrethrum derivatives) : Pothrin, resmethrin, permethrin, bio permethrin, cypermethrin, cyphenothrin, cycloprothrin, deltamethrin, cyfluthrin, etofenprox.

952. The number of times the air in a living room should be recycled is ?

a) 2-3 times

b) More than 6 times

c) 4 times

d) None

Correct Answer - A

Ans. is 'a' i.e., 2-3 times [Ref Park 22nd/e p. 685]

Standards of ventilation

- Cubic space:- Fresh air supply 3000 cubic feet per person per hour (range is 300-3000 c.ft).
- Air change:- 2 to 3 times per hour in living room and 4 to 6 times per hour in work rooms and assemblies.
- Floor space:- 50-100 Sq. ft. per person (heights over 10 to 12 feet are not taken into account).

953. Gas causing green house effect ?

a) CO₂

b) Methane

c) Sulfur hexafluoride

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

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954. The following is not a Nerve gas ?

a) Sarin

b) Tabun

c) Soman

d) Pyrolan

Correct Answer - D

Ans. is 'd' i.e., Pyrolan

- Nerve gases are a class of organophosphates that act by inhibiting enzyme acetylcholinesterase, an enzyme that destroys acetylcholine.
- The classical examples are tabun, sarin, soman and cyclosarin.
- These are used as chemical weapons in wars, i.e. chemical warfare.

955. Stage of contraction of family starts at ?

a) Marriage

b) Birth of first child

c) Birth of last child

d) Leaving home of first child

Correct Answer - D

Ans. is 'd' i.e., Leaving home of first child

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956. Custom is defined as -

a) Established pattern of behavior

b) Prescribed order of ceremony

c) Ban to a particular activity

d) None

Correct Answer - A

Ans. is 'a' i.e., Established pattern of behavior

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957. Study of person to person inter-relationship in a society -

Economics

- a) Economics
- b) Suciology
- c) Psychology
- d) Anthropology

Correct Answer - B
Ans. is 'b' i.e., Sociology

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958. Patterns of Inter-relationships between persons in a society is ?

a) Social structure

b) Social psychology

c) Herd structure

d) Social science

Correct Answer - A

Ans. **is** 'a' i.e., Social structure

- Patterns of inter-relationships between persons in a society is called social structure. Note - Study of human inter-relationship is called sociology.

959. A temporary, provisional view held by the people on a point of view is:

a) Opinion

b) Belief

c) Practice

d) Attitude

Correct Answer - A

Opinion are views held by people on a point of dispute.

They are based on evidence available at the time.

Opinions by definition are temporary, provisional.

They can be looked on as beliefs for the time being.

Ref: Park's Textbook of Preventive and Social Medicine, 19th edition, Page 542.

960. Most common type of mental retardation ?

a) Mild

b) Moderate

c) Severe

d) Profound

Correct Answer - A
Ans. is 'a' i.e., Mild

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961. In ESI programme central, state, Govt. employee contribute to the fund. Employer's contribution is ?

a) 5.75%

b) 4.75 %

c) 3.75%

d) 2.75%

Correct Answer - B

Ans. is 'b' i.e., 4.75%

Finance of ESI scheme

- The scheme is run by contribution by employees and employers and grants from central and state governments -
 1. Employers contribution → 4.75% of total wages bills
 2. Employee contribution → 1.75% of total wages bills
 3. The state government's share of expenditure on medical care is $\frac{1}{8}$ of total cost of medical care.
 4. The ESI corporations share of expenditure on medical care is $\frac{7}{8}$ of total cost of medical care. Note - Employees getting daily wages of below Rs 50 are exempted from payment contribution.

962. Shape of normal distribution curve?

a) J shape

b) U shape

c) Bell shape

d) None

Correct Answer - C

Ans. is 'c' i.e., Bell shape

o Standard normal curve (Gaussian distribution) is *bell shape curve*.

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963. One standard deviation in normal standard curve includes value-

a) 50%

b) 68%

c) 95%

d) 100%

Correct Answer - B

Ans. is 'b' i.e., 68%

o 1 SD includes	---->	68% of values
o 2 SD includes	---->	95% of values
o 3 SD includes	---->	99.7% of values

964. Significant value of 'p' is ?

a) 0.01

b) 0.02

c) 0.04

d) 0.05

Correct Answer - D

Ans. is 'd' i.e., 0.05

- P is the probability that the difference seen between 2 samples occurs due to chance".
- If $p \leq .05$ it is considered statistically significant.
- It means that
- There is 5% probability that the result could have been obtained by chance. or
- The investigator can be 95% sure that the result was not obtained by chance.

965. Spot map is used for ?

a) Local distribution of disease

b) Rural-urban variation

c) National variation

d) None

Correct Answer - A

Ans. is 'a' i.e., Local distribution of disease

- Inner and outer city variations in disease frequency are well known.
- These variations are best studied with the aid of "spot maps" or "shaded maps".
- These maps show at a glance areas of high and low frequency, the boundaries and distribution.
- For example, if the map shows "clustering" of cases, it may suggest a common source of infection or a common risk factor shared by all the cases.
- The classical example of use of spot maps was by John snow for cholera epidemic in 1854.

966. If correlation between weight and heights are very strong what will be the correlation coefficient ?

a) +1

b) > 1

c) 0

d) None

Correct Answer - A

Ans. is 'a' i.e., +1

o A correlation simply expresses the strength and direction of the relationship between two variables in terms of a correlation coefficient, signified by 'r'.

o Values of r varies from -1 to +1.;

o The strength of the relationship is indicated by the size of the coefficient, whereas its direction is indicated by the sign(+ or -)

o A *plus sign (+)* means : *That there is a positive correlation between the two variables - high values of one variable (such as salt intake) are associated with high value of the other variable (such as blood pressure) i.e salt intake is directly proportional to blood pressure.*

o A *negative sign (-)* means : *That there is a negative correlation between the two variables - high values of one variables (such as cigarette consumption) are associated with low values of the other (such as life expectancy). Cigarette consumption is inversely proportional to life expectancy*

o If there is a perfect linear relationship between the two variables so that it is possible to know the exact value of one variable from the knowledge of other variable, the correlation coefficient (r) will be exactly + or - 1.00 (+1 or -1)

exactly 0 or ± 1.00 (± 0.1 or ± 1).

o If there is absolutely no relationship between the two variables so that it is impossible to know anything about one variable on the basis of knowledge of the other variable. Then the coefficient will be 0.

Strength of correlation

o The strength of linear relationship between two random variables X and Y is based on the value of correlation coefficient and is often summarized according to the following guidelines:-

For Positive Correlation

For negative correlation

Interpretation

$r < 0.30$

$-0.30 < r$

very weak linear relationship

$0.30 \leq r < 0.50$

$-0.50 < r \leq -$

0.30

weak linear relationship

$0.50 \leq r < 0.80$

$-0.80 < r$

0.50

moderate linear relationship

$0.80 \leq r < 0.90$

$-0.90 < r$

0.80

strong linear relationship

$r \geq 0.90$

$-1.00 < r$

very strong linear relationship

o If you have difficulty in interpreting above table, I am giving in very simple language:-

A. Positive Correlation

i) Correlation coefficient *less than 0.30* Very weak positive correlation.

ii) Correlation coefficient *0.30 to 0.49* --) Weak Positive correlation

iii) Correlation coefficient *0.50 to 0.79* Moderate Positive correlation

iv) Correlation coefficient *0.80 to 0.89* —) Strong Positive correlation

v) Correlation Coefficient *equal to or greater than 0.90* —> very strong positive correlation.

B. Negative Correlation

i) Correlation coefficient *more than - 0.30* Very weak negative correlation

ii) Correlation coefficient *- 0.30 to - 0.49* --> Weak negative

correlation

iii) Correlation coefficient - 0.50 to - 0.79 → Moderate negative correlation

iv) Correlation coefficient - 0.80 to - 0.89 Strong negative correlation.

v) Correlation coefficient *equal or less than* - 0.90 → very strong negative correlation

Note: you should keep in mind that for negative values, more means towards more positive side and less means towards more negative side. For example; if we are saying, more than - 0.30, that mean - 0.29, - 0.28, - 0.27 so on; and if we are saying less than - 0.90 that means - 0.91, - 0.92 so on.

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967. Type of sampling, if random sample is taken from a characteristic population, eg. Hindus, Muslims, Christians etc?

a) Simple random

b) Systemic random

c) Stratified random

d) Cluster

Correct Answer - C

Ans. is 'c' i.e., Stratified random

- Stratified random sampling is particularly useful where one is interested in analysing the data by a certain characteristic of the population, viz Hindus, Muslims, Christians, age group etc, - as we know these groups are not equally distributed in the population."

..... Park

Simple random sampling

- Simple random sampling, also, known as '*unrestricted random sampling*'; is applicable for small, homogenous, readily available population and is used in clinical trials.
- In simple random sampling each individual is chosen randomly and entirely by chance.
- So, *each individual has the same probability of being chosen* at any stage during the sampling process.

For example : ?

- Let us assume you had a school with 1000 students, divided equally into boys and girls, and you wanted to select 100 of them for further study.
- You might put all their names in a bucket and then pull 100 names

out.

- Not only does each person have an equal chance of being selected, we can also easily calculate the probability of a given person being chosen, since we know the sample size (n) and population (N) and it becomes a simple matter of division $\rightarrow n/N$ or $100/1000 = 0.10$ (10%).
- This means that every student in the school has a 10% or 1 in 10 chance of being selected using this method.

Systematic random sampling

- In order to do systematic random sampling, the individuals in a population are arranged in a certain way (for example, alphabetically).
- A random starting point is selected and then every n^{th} (for example 10th or 15th) individual is selected for the sample.
- That is, after arranging the individuals in certain pattern (e.g., alphabetically) a starting point is chosen at random, and choices thereafter at regular intervals.
- For example, suppose you want to sample 8 houses from a street of 120 houses.
- $120/8 = 15$, So every 15th house is chosen after a random starting point between 1 and 15.
- If the random starting point is 11, then the houses selected are $\rightarrow 11, 26, 41, 56, 71, 86, 101, \text{ and } 116$.
- In contrast to simple random sampling, some houses have a larger selection probability e.g., in this question 11, 26, 41, 56, 71, 86, 100 and 116.
- While the remaining number can not be selected.

Stratified random sampling

- When sub-populations vary considerably, it is advantageous to sample each subpopulation (stratum) independently.
- *Stratification* is the process of grouping members of the population into relative homogenous subgroups before sampling.
- The strata should be mutually exclusive, every element in the population must be assigned to only one stratum.
- Then *systematic random sampling* method is applied within each stratum.
- Population $\rightarrow$ Stratification $\rightarrow$ Systematic random sampling $\rightarrow$

Sample.

- This often improves the representativeness of the sample by reducing sampling error.
- For example, suppose in a population of 1000, sample of 100 is to be drawn for Hb estimation, first convert the population into homogenous strata (e.g., 700 males and 300 females), then draw 70 males and 30 females by doing systematic random sampling.

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968. People are separated into groups, from each group people are selected randomly. What type of sampling is this -

a) Simple random

b) Stratified random

c) Systemic random

d) Cluster

Correct Answer - B

Ans. is 'b' i.e., Stratified random

o Separation of people in groups followed by random sampling from those groups is stratified random sampling.

969. Which of the following is seen in the recovery phase after a disaster except

a) Rehabilitation

b) Reconstruction

c) Response

d) Preparedness

Correct Answer - D

Ans. is 'd' i.e., Preparedness

Disaster Management includes three aspects:

1. Disaster impact and response:

Search, rescue, and first-aid

- Field care
- Triage
- Tagging
- Identification of the dead

2. Rehabilitation or recovery:

- Water supply
- Basic sanitation and personal hygiene
- Food safety
- Vector control

3. Mitigation: Measures designed either to prevent hazards from causing disaster or to reduce the effects of the disaster. This also includes preparedness for any impending disasters or in disaster-prone areas.

970. Moribund patient, triage color ?

a) Red

b) Black

c) Yellow

d) Green

Correct Answer - B

Ans. is 'b' i.e., Black

Triage

- When the quantity and severity of injuries overwhelm the operative capacity of health facilities, a different approach to medical treatment must be adopted.
- The usual principle of "first come, first treated", is not followed in mass emergencies.
- Triage consists of rapidly classifying the injured and the likelihood of their survival with prompt medical intervention.
- Higher priority is granted to victims whose immediate or long-term prognosis can be dramatically affected by simple intensive care.
- Moribund patients who require a great deal of attention, with questionable benefit have the lowest priority.
- The most common triage classification system used internationally is four colour code system.

Red -, High priority treatment or transfer

Yellow Medium priority

Green Ambulatory patients

Black Dead or moribund patients

971. High priority in triage is for -

a) Red color

b) Yellow color

c) Green color

d) Black color

Correct Answer - A

Ans. is 'a' i.e., Red colour

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972. Which waste cannot be incinerated -

a) Anatomic waste

b) Microbiology waste

c) Halogenated plastic

d) Infectious waste

Correct Answer - C

Ans. is 'c' i.e., Halogenated plastic

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973. Which of the following is the nodal centre for disaster management

a) PHC

b) CHC

c) Control room

d) None

Correct Answer - C

Ans. is 'C' i.e., Control room

- o The control room is the nodal center in terms of disaster management.
- o The control room plays a vital role in disaster management activation.
- o It coordinates the flow of information with respect to activities associated with relief operations.
- During **normal times** it **maintains** systematic data-based information of the resources available, important Government and non-Government officials, local bodies and NGOs.
- During a **crisis (disaster)** it is expected to function as a center for decision making and to keep constant touch with the affected areas to provide organized relief and rescue operations immediately after occurrence or receipt warning of disaster.
- o There will be separate control rooms at the block level.

974. Which is the calamity with most amount of damage -

a) Flood

b) Earthquake

c) Landslides

d) Volcanoes

Correct Answer - A

Ans. is 'a' i.e., Floods

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975. Propaganda Is defined as -

- a) Forcing of knowledge into mind
- b) *Active* acquiring of knowledge
- c) Requiring knowledge after thinking
- d) Training of people to *use* judgment before acting

Correct Answer - A

Ans. is 'a' i.e., Forcing of knowledge into mind

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976. No of inpatient beds in PHC ?☐ a) 6☐ b) 10☐ c) 20☐ d) 25

Correct Answer - A

Ans. is 'a' i.e., 6 [Ref Park 22nd/e p. 845]

PHC 6 beds

CHC → 30 beds

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977. One PHC covers how much population in hilly area?

a) 10000

b) 20000

c) 30000

d) 50000

Correct Answer - B
Ans. is 'b' i.e., 20000

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978. Highest level of health care system in India -

- a) Primary health care
- b) Secondary health care
- c) Tertiary health care
- d) All are same

Correct Answer - C

Ans. is 'c' i.e., Tertiary health care

Levels of health care

- It is customary to describe health care service at 3 levels, viz. primary, secondary and tertiary care levels. o These levels represent different types of care involving varying degrees of complexity.
 1. Primary care level
- It is the first level of contact of individuals, the family and community with the national health system, where "primary health care", ("essential" health care) is provided.
- As a level of care, it is close to the people, where most of their health problems can be dealt with and resolved.
- It is at this level that health care will be most effective within the context of the area's needs and limitations.
- In India, primary health care is provided by PHC and their subcentres through the agency of multipurpose health workers, village health guides and trained dais.
 2. Secondary care level
- The next higher level of care is the secondary (intermediate) health care level.
- At this level more complex problems are dealt with.
- In India, this kind of care is generally provided in district hospitals

and community health centres which also serve as the first referral level.

3. Tertiary care level

- The tertiary level is a more specialized level than secondary care level and requires specific facilities and attention of highly specialized health workers.
- This care is provided by the regional or central level institutions, e.g., Medical College Hospitals, All India Institutes, Regional Hospitals, Specialized Hospitals and other Apex Institutions

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979. Most basic level of Health Care System in India -

- a) Primary health care
- b) Secondary health care
- c) Tertiary health care
- d) All are same

Correct Answer - A

Ans. is 'a' i.e., Primary health care

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980. Service applied, staff recruitment, staff trained, Equipment ordered, equipment installed, product delivered which is the critical step

a) Staff recruitment

b) Staff trained

c) Equipment ordered

d) Equipment installed

Correct Answer - D

Ans. is 'd' i.e., Equipment installed

981. NVBDCP includes all except?

a) Malaria

b) Filarial

c) Kala azar

d) Chikungunya

Correct Answer - D

Ans. is d i.e., Chikungunya

o National Vector Borne Disease control programme (NVBDCP) includes *malaria, dengue, filaria*, JE and kala-azar. Health programmes in India

o Since India become independent, several measures have been undertaken by National Government to improve the health of the people.

o Prominent among these measures are the NATIONAL HEALTH PROGRAMMES which have been launched by the *central Government* for control/eradication of the communicable diseases, improvement of environmental sanitation, raising the standard of nutrition, control of population and improving rural health. National Health Programmes currently working in India : ?

1. National vector Borne Disease Control Programme *Malaria*, Dengue, *Filaria*, JE, Kala-azar.
2. National leprosy eradication programme.
3. Revised National TB control programme.
4. National programme for control of blindness.
5. National iodine deficiency disorders control programme.
6. National mental health programme
7. National AIDS control programme

- }. National cancer control programme
- }. UIP
- }. National Programme for prevention & control of deafness.
- .. Piolet Programme on prevention & control of DM, CVD, & deafness.
- 2. National tobacco control programme
- 3. RCH programme.

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982. Consumer protection act includes all, except ?

- a) Passed in 1986
- b) Decision within 3-6 months
- c) ESI hospitals not included
- d) Right to safety

Correct Answer - C

Ans. is 'c' i.e., ESI hospitals not included

Consumer protection act

- For the first time in India, the *Consumer Protection Act 1986* provided consumers a forum for speedy redressal of their grievances against medical services.
- According to this act, the *decision should be taken within 3-6 months*.
- There is *no court fee payment* and the person can plead his own case.
- Recently even *ESI hospitals have been brought within the ambit* of this act.
- COPRA is a piece of comprehensive legislation and recognizes six rights of consumer:-
 1. Right to safety
 2. Right to be informed
 3. Right to choose
 4. Right to be heard
 5. Right to seek redressal
 6. Right to consumer education
- For medical negligence, complain can be given to MCI or can be filed in consumer court.

- MCI can take disciplinary action, e.g. temporary or permanent cancellation of registration of concerned doctor. But, MCI cannot punish a doctor or give a compensation.
- Consumer courts give compensation. The limits of consumer courts are:-
 1. District consumer court → Up to Rs. 20 lacs.
 2. State commission → Rs. 20 lacs to Rs. 1 crore.
 3. National commission → Above Rs. 1 crore.

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983. Consumer protection act was passed in ?

a) 1977

b) 1986

c) 1993

d) 1998

Correct Answer - B

Ans. is 'b' i.e., 1986

- Consumer protection act was passed in 1986.

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984. Dowry prohibition act 1986, punishment is ?

a) Tyr, Rs 25000

b) Tyr Rs 15000

c) 5yr, Rs 25000

d) 5yr Rs 15000

Correct Answer - D

Ans. is 'd' i.e., 5yr Rs 15000

- According to "The Dowry Prohibition Act, 1961 (Amended 1986)", if any person violates the act may be punished with the imprisonment for a term not less than 5 years and with a fine which shall not less than Rs. 15000 or amount of the value of such dowry which ever is more.
- Also know
- According to section 304 B IPC, the punishment for dowry death is imprisonment for a term of minimum 7 years, which may be extended to life imprisonment.

985. Objectives of National Mental Health programme are all accept -

- a) Promote community participation
- b) Promote application of mental health knowledge
- c) Provides free antipsychotic drugs to all
- d) Provide accessibility of mental health care

Correct Answer - C

**Ans. is 'c' i.e., Provides free antipsychotic drugs to all
National Mental Health Programme (NMHP)**

The (10% eminent of India has launched the National Mental Health Programme in 1982, with the following objectives:

- a) *To ensure availability and accessibility of minimum mental healthcare for all in the foreseeable future, particularly to the most vulnerable and underprivileged section of the population.*
- b) *To encourage the application of mental health knowledge in general healthcare and in social development.*
- c) *To promote community participation in the mental health service development.*

o The District Mental Health Programme (DMHP) was launched under NMHP in the year 1996, which was based on 'Bellary Model' with the following components.

- a) *Early detection and treatment.*
- b) *Training of general physicians and health workers.*
- c) *IEC : Public awareness generation.*
- d) *Monitoring (for simple record keeping).*

o The NMHP was re-strategized in year 2003 with following components:?

- 1) *Extension of DMHP to 100 districts.*

- 2) *Upgradation of psychiatric wing in medical colleges/General hospitals.*
- 3) *Modernization of state mental hospitals.*
- 4) *IEC*
- 5) *Monitoring and evaluation.*

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986. Juvenile justice act defines a juvenile which is

- a) Male below 16 years
- b) Female below 16 years
- c) Male below 18 years
- d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Male below 18 years

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987. Indira Gandhi Matritva Sahyog Yojana is for ?

a) > 65 years old

b) > 50 years old

c) > 30 years old

d) > 19 years old

Correct Answer - D

Ans. is d i.e., > 19 years old

o The Indira Gandhi Matritva Sahyog Yojana (IGMSY) is a flagship program of the government of India introduced in 2010 under the *Ministry of Women and Child Development*.

o It is a *conditional cash transfer scheme* that targets *pregnant and lactating women 19 years of age and older who have two children*. Its goal is to partly compensate them for wage-loss during childbirth and childcare and to provide conditions for safe delivery and good nutrition and feeding practices.

988. NSABP stands for ?

- a) National surgical adjuvant for breast project
- b) National surgical adjuvant for breast and bowel project
- c) National surgical adjuvant for brain and breast
- d) National surgical adjuvant for bowel and brain

Correct Answer - B

Ans. is 'b' i.e., National surgical adjuvant for breast and bowel project

- The *National Surgical Adjuvant Breast and Bowel Project (NSABP)* is a clinical trials cooperative group supported since its inception by national cancer institute (NCI).

989. Mental Health Act was passed in ?

a) 1982

b) 1987

c) 1971

d) 1950

Correct Answer - B
Ans. is 'b' i.e., 1987

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990. Weber ferguson approach is used for?

a) Mastoidectomy

b) Maxillectomy

c) Myringoplasty

d) Mandibulectomy

Correct Answer - B

Ans. B. Maxillectomy

WEBER FERGUSON APPROACH:

- This approach involves an extension of the lateral rhinotomy incision that includes the splitting of upperlip.
- Indications: Exenteration of maxilla for total or subtotal maxillectomy (splitting the upper lip releases the facial flap for adequate lateral retraction and adds transoral exposure of palate and teeth)

991. Retroauricular incision is also known as?

a) Rosen's incision

b) Lempert's -I incision

c) Lempert's-II incision

d) Wilde's incision

Correct Answer - D

Ans. is'd'i.e., Wilde's incision

[Ref: Dhingra Sth/e p. 410]

- Wilde's incision is used for postaural (retroauricular) approach.
- Lempert's incision is used for endaural approach.
- Rosen's incision is used for stapedectomy through endomeatal or transcanal approach,

992. Submandibular nodes are classified as ?

a) Level IA neck nodes

b) Level IB neck nodes

c) Level II neck nodes

d) Level III neck nodes

Correct Answer - B

Ans. is 'b' i.e., Level 1B neck nodes

- Division of neck nodes according to levels

Level I Submental (IA) **Submandibular (IB)**

Level II Upper jugular

Level III Mid jugular

Level IV Lower jugular

Level V Posterior triangle group (Spinal accessory and transverse cervical chains)

Level VI Prelaryngeal Pretracheal Paratracheal

Level VII Nodes of upper mediastinum

993.

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Modified radical neck dissection includes which level of cervical lymph nodes?

a) I-III

b) I-IV

c) I-V

d) I-VII

Correct Answer - C

Ans. is 'c' i.e., I-V

Radical neck dissection

- During radical neck dissection, following are removed.
 - i. Lymph nodes of submental, submandibular, upper, middle and lower jugular, and lateral (posterior) triangle regions, i.e. **Level I to V** along with its fibrofatty tissue.
 - ii. Sternomastoid muscle.
 - iii. Internal jugular vein.
 - iv. Spinal accessory nerve.
 - v. Submandibular salivary gland.
 - vi. Tail of the parotid.
 - vii. Omohyoid muscle.
- Following structures are saved -
 - Carotid artery
 - Brachial plexus, phrenic nerve, vagus nerve, cervical sympathetic chain, marginal mandibular branch of facial, lingual and hypoglossal nerve.

Modified neck dissection

- It is similar to radical neck dissection but with preservation of one or more following structures -
 - .. Spinal accessory nerve

- 2. Internal jugular vein
- 3. Sternocleidomastoid muscle
- Thus, both radical neck dissection and modified radical neck dissection remove level I to V neck nodes.
- Different levels of neck nodes have been explained in previous sessions.

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994. Cone of light focuses on which quadrant of tympanic membrane?

a) Anteroinferior

b) Posteroinferior

c) Anterosuperior

d) Posterosuperior

Correct Answer - A

Ans. is 'a' i.e., Anteroinferior

Cone of light

- Seen in anteroinferior quadrant of the tympanic membrane is actually the reflection of the light projected into the ear canal to examine it.
- This part reflects it because it is the only part of tympanic membrane that is approximately at right angles to the meatus.
- This difference in different part of the tympanic membrane is due to the handle of malleus which pulls the tympanic membrane and causes it to tent inside.
- Thus, the handle of malleus causes tenting and because of tenting the antero-inferior quadrant is at right angles to the meatus and thus reflects the light (leading to cone light).

995. Macula is stimulated by ?

a) Gravity

b) Head position change

c) Linear acceleration

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

- Vestibular apparatus (Peripheral part of vestibular system)
- The vestibular apparatus *within the inner ear* detects head motion and position and transduces this information to a neural signal. The vestibular apparatus has following parts :-

996. Ossicles of middle ear are responsible for which of the following ?

- a) Amplification of sound intensity
- b) Reduction of sound intensity
- c) Protecting the inner ear
- d) Reduction of impedance to sound transmission

Correct Answer - D

Ans. is 'd' i.e., Reduction of impedance to sound transmission

- The ear canal (auditory canal) acts as a resonator, i.e. it resonates (amplifies frequencies) between 2000 and 5000 (average 3000) cycles per second and therefore most energy will be transmitted to the cochlea in these frequencies.
- However, if this sound energy hits the inner ear fluid directly most of the energy would be reflected, resulting in hearing loss (as all the sound wave is reflected and nothing is transmitted as electrical impulse).
- Therefore, there is a need for a transformer mechanism, a need that is fulfilled by middle ear → middle ear converts sound of greater amplitude but lesser force to that of lesser amplitude but greater force.
- This function of the middle ear is called impedance matching mechanism or the transformer action.

997. Endolymph resembles ?

a) CSF

b) ICF

c) ECF

d) Plasma

Correct Answer - B

Ans. is 'b' i.e., ICF

Endolymph → Resembles intracellular fluid, rich in I^+ ions.

Perilymph (ectolymph) → Resembles ECF, rich in Na^+ ions.

- Perilymph communicates with CSF through cochlear aqueduct therefore has characteristics similar to CSF.

Fluid in the inner ear

- There are two main fluids in the inner ear : ?

.. Perilymph

2. Endolymph

Perilymph

- It resembles ECF and is rich in Na^+ ions. It fills the space between bony and the membranous labyrinth, i.e., Scala vestibuli and scala tympani.
- It communicates with CSF through the aqueduct of Cochlea which opens into the scala tympani near the round window. Therefore It closely resembles CSF.
- It is formed by : -
 - .. It is a filtrate of blood serum and is formed by capillaries of the spiral ligament.
 - 2. It is a direct continuation of CSF and reaches the labyrinth via aqueduct of cochlea.

Endolymph

- It fills the entire membranous labyrinth including scala media (cochlear duct).
- It resembles **intracellular fluid**, being rich in K^+ ions.
- It is secreted by the *secretory cells of the stria vascularis* of the cochlea and by the *dark cells* (present in the utricle and near the ampullated ends of semicircular ducts).

998. Which of the following is responsible for localization of sound ?

- a) Cochlear nerve
- b) Cochlea
- c) Superior olivary nucleus
- d) Cochlear nuclei

Correct Answer - C

Ans. is 'c' i.e., Superior olivary nucleus

Localization of sound in space

- A human can distinguish sounds originating from sources separated by as little as 1 degree. Binaural receptive fields (which is a feature of most auditory neurons above the level of cochlear nuclei) contribute to sound localization. In other words, relay nuclei in the brain stem (especially the **superior olivary nuclei complex**) mediate localization of sound. The auditory system uses following clues to judge the origin of sound :?
- Time lag between the entry of sound in two ears :- For example, if the sound originates from the right side of a person, it reaches the right ear earlier than the left ear. This time lag is more important for relatively low -frequency sounds (below 3000 Hz).
- Difference in intensities between the sound in the two ears :- It is important for sounds of higher frequencies (>3000 Hz).
- Sounds coming from directly in front of the individual and the back of the individual cannot be differentiated by the above two mechanisms. Here shape of pinna plays a role, it changes the quality of the sound depending on the direction from which sound comes.

999. True about central nystagmus ?

- a) Changing direction
- b) Not suppressed by optic fixation
- c) Horizontal or vertical
- d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Nystagmus

- Nystagmus is *rhythmic oscillatory movement* of eye.
- Nystagmus has following characteristics :?
 - .. Rapid,
 - .. Involuntary,
 - .. Repetitive
- Nystagmus may be :?
 - .. Side to side (**horizontal nystagmus**)
 - .. Up and down (**vertical nystagmus**)
 - .. Rotary
- Vestibular nystagmus has two components, i.e. a slow and a fast.
- The direction of nystagmus is indicated by the direction of fast component.
- Vestibular nystagmus may be :?
 - .. Peripheral :- due to lesion of labyrinth or VIII nerve.
 - .. Central :- due to lesion of vestibular nuclei, brainstem or cerebellum.
- i. Peripheral nystagmus
 - Diminishes or suppresses with gaze fixation (optic fixation)
 - Enhances in darkness or by use of Frenzel glasses
 - Unidirectional fast component
 - Direction is typically horizontal - rotary, not purely horizontal or rotary

- and not vertical
- Direction is fixed towards undermost ear
- Present in one head position
- ii. Central nystagmus
- **Not suppressed by optic fixation**
- Fast component can be unidirectional or bidirectional
- Can be horizontal, vertical or rotary
- **Direction is changing**
- Present in multiple head positions

1000. Stimulation of horizontal semicircular canal causes nystagmus in which directions ?

a) Vertical

b) Horizontal

c) Rotary

d) Any of the three

Correct Answer - B

Ans. is '**b**' i.e., Horizontal

- The cupulae of the semicircular canals are stimulated by movement of endolymphatic fluid and each canal causes the nystagmus in its own plane :-
 1. Stimulation of horizontal SCC → 4 Horizontal nystagmus.
 2. Stimulation of superior SCC → 4 Rotary nystagmus.
 3. Stimulation of vertical SCC → Vertical nystagmus

1001. Bilateral past-pointing is due to defect in ?

a) Brainstem

b) Cerebellum

c) Vestibular system

d) Basal ganglia

Correct Answer - C

Ans. is 'c' i.e., Vestibular system

- Past-pointing is the deviation of the extremities caused by either *cerebellar hemisphere or vestibular disease*.
- Testing is usually done with arms. The traditional method is to have the patient extend the arm and place his extended finger on the examiner's index finger; then with the eye closed raise the arm directly overhead; then bring it back down precisely onto the examiner's finger.
- If vestibular or cerebellar lesion is there, past pointing (deviation of limb) will be present.
- The two types (cerebellar and vestibular) past pointing have different patterns :-
 - 1. With vestibular in:balance, the normal labyrinth will push the limb toward the abnormal side and the patient will miss the target. The past pointing will always be to the same side of target and will occur with either limb.
 - 2. With a cerebellar hemispheric lesion, the ipsilateral limbs will have ataxia and incoordination; past pointing occurs only with the involved arm and may be to the side of lesion or erratically to either side of the target.

So,

- Bilateral past-pointing → Vestibular system defect.
- *Unilateral past-pointing* → *Cerebellar hemisphere defect.*

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1002. All are true about otitic barotrauma except ?

- a) Conductive deafness
- b) Retracted tympanic membrane
- c) Catheterization can be used
- d) Occurs during sudden ascent in aircraft

Correct Answer - D

Ans. is 'd' i.e., Occurs during sudden ascent in aircraft

Otitic Barotrauma

- This condition is seen when the ambient pressure is rising, e.g. in scuba diving (underwater diving), **descending in an aircraft**, or compression in pressure chamber.
- It occurs due to pressure differences between the inside and outside of the eardrum.
- Clinical features
- Ear discomfort or pain, **hearing loss**, and tinnitus are common
- Vertigo is uncommon
- Otoscopy findings are :-
- **Congested and retracted tympanic membrane**
- Blood may extravasate into middle ear producing haemotympanum
- On examination there is conductive deafness.
- Pathogenesis of otitic barotrauma
- The middle ear pressure is normally maintained at a level similar to that of the atmosphere by the function of Eustachian tube which allows passage of air from middle ear to pharynx. Sudden or dramatic changes of external pressure may defeat this mechanism and cause injury to middle ear. When atmospheric pressure is higher than that of middle ear by critical level of 90 mm Hg,

eustachian tube gets locked as the soft tissues of pharyngeal end of the tube are forced into the lumen by high atmospheric pressure.

This results in sudden negative pressure in the middle ear which causes retraction of tympanic membrane, hyperemia, transudation with hemorrhage and development of

- Aero-otitis media (barotrauma)
- At pressure difference >100 to 500 mm Hg, tympanic membrane can rupture → when the pressure difference is more than 100 mm Hg, tympanic membrane can rupture.

Treatment of otitic Barotrauma

- Routine self treatment of pain associated with changing pressure in air craft includes chewing gum, attempting to yawn & swallow, blowing against closed nostrils, and using decongestant nasal sprays. The aim is to restore middle ear aeration.
- **Catheterization** or politzerization can also be used. If the eustachian tube will not open with other treatments, surgery may be necessary. Myringotomy and aspiration of fluid is the surgical procedure used.

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1003. Most commonly used tuning fork in ear examination?

a) 128 Hz

b) 256 Hz

c) 512 Hz

d) 1024 Hz

Correct Answer - C

Ans. is 'c' i.e., 512 Hz

- Commonly used tuning fork has a frequency of **512 Hz**.
- Forks of other frequencies, e.g. 256 and 1024 Hz should also be available.

1004. Lomard's test is used to diagnosis ?

- a) Conductive hearing loss
- b) Sensorineural hearing loss
- c) Mixed hearing loss
- d) Non-organic hearing loss

Correct Answer - D

Ans. is 'd' i.e., Non-organic hearing loss

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1005. Red line in pure tone audiometry is for -

a) Bone conduction

b) Air conduction

c) Right ear

d) Left ear

Correct Answer - C
Ans. is 'c' i.e., Right ear

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1006. All are true about Rinne's test except ?

- a) Positive in normal ear
- b) Positive in sensorineural hearing loss
- c) Minimum 15-20 dB air bone gap is required in conductive deafness
- d) **Bone** conduction is better in sensorineural hearing loss

Correct Answer - D

Ans. is 'd' i.e., Bone conduction is better in sensorineural hearing loss

Rinne's Test

- The Rinne test is a tuning fork test that compares hearing by air conduction and bone conduction. The Rinne test is based on the idea that hearing mechanism is normally more efficient by air conduction (AC) than it is by bone conduction (BC), i.e., $AC > BC$ in normal persons. For this reason, a tuning fork will sound louder and longer by air conduction than by bone conduction. However, this air conduction advantage is lost when there is a conductive hearing loss in which case the tuning fork sounds louder by bone conduction than by air-conduction.

Method

- Administering the Rinne test involves asking the patient to indicate whether a vibrating tuning fork sounds louder when its base is held against mastoid process (bone conduction) or when its prongs are held near the pinna, facing the opening of ear canal (air conduction). After striking the fork, the clinician alternates it between these two positions so that the patient can make a judgement about which one is louder.
- Interpretation of Rinne's test
- The outcome of the Rinne test is traditionally called "positive" if the

fork is louder by air conduction and this finding implies that the ear is normal or has sensorineural hearing loss. The results are called "negative" if the bone-conduction is louder than air-conduction, which is interpreted as revealing the presence of conductive deafness i.e., lesions of either external ear, tympanic membrane, middle ear or ear ossicles..

- In conductive deafness Rinne's test will be negative if the conductive hearing loss is greater than 15-20 dB (**minimum air bone gap 15-20 dB**). That means, at least 15-20 dB of conductive hear loss is required to show bone conduction better than air conduction, i.e., Negative Rinne's test. A negative Rinne test for 256, 512 and 1024 Hz indicates a minimum air-bone gap (ABG) of 15, 30, 45 dB respectively. Therefore, AB gap can be made if tuning forks of 256, 512 and 1024 Hz are used : -
 1. A Rinne test equal or negative for 256 Hz but positive for 512 Hz indicates air-bone gap of 20-30 dB.
 2. A Rinne test negative for 256 and 512 Hz but positive for 1024 Hz indicates air-bone gap of 30-45 dB.
 3. A Rinne negative for all the three tuning forks of 256, 512, and 1024 Hz, indicates air-bone gap of 45-60 dB.

Rationale of positive test

- Positive test ($AC > BC$) is seen in :?
 1. **Normal person**
- It has already been explained that air conduction is better than bone conduction, thus Rinne test is positive in normal person.
- 2. **Sensori-neural hearing**
- In sensorineural hearing loss, the defect is in cochlea or VIII nerve or its central connection. There is no defect in conductive apparatus of ear (air conduction) or in mastoid bone (bone conduction). As **air conduction is better than bone conduction**, Rinne test will be positive (because both air conductive apparatus and bone conductive apparatus are normal and the pathology is distal to them).
- Negative test ($BC > AC$) is seen in : ?
 1. Conductive deafness
- As the conductive apparatus is defective, bone conduction becomes better than air conduction ($BC > AC$).

2. *Severe unilateral sensorineural hearing loss*

- Here the Rinne test is false negative (not true negative) as it is interpreted by the patient that $BC > AC$, but actually it is not. In reality this response is from the opposite ear because of transcranial transmission of sound during bone conduction testing. This can be prevented by masking the non-test ear with Barany's box while testing the bone conduction. Weber test will help for such situation.

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1007. In sensorineural hearing loss, weber's test is lateralized to

- a) Normal ear
- b) Defective ear
- c) Not lateralized
- d) May alternate

Correct Answer - A

Ans. A. Weber test is lateralized to the unaffected or normal ear.

PURPOSE: Determination of a conductive vs. a sensorineural hearing loss.

- Strike tuning fork and **place base in the center of the forehead or the top of the head**
- Ask if the tone is louder in the left ear, the right ear or equally loud in both ears due to the sound localization process,
- In a patient with a unilateral **conductive hearing loss**, the sound will be **louder in the affected ear** (airborne sounds mask bone conduction in the normal ear; conductive loss prevents masking in affected ear sound is perceived to be louder in affected ear)
- In a patient with unilateral **sensorineural hearing loss**, the sound is **louder in the normal ear** (no signal is transduced by the cochlea on the affected side, therefore the sound is louder on the normal side and is perceived to be coming from that side)
- In a normal person or a person with symmetrical hearing loss, **it is equally loud in both ears.**
- In other words, a normal patient, the Weber tuning fork sound is heard equally loudly in both ears, with no one ear hearing the sound louder than the other (lateralization). In a patient with hearing loss, the Weber tuning fork sound is heard louder in

one ear (lateralization) than the other.

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1008. In noise induced hearing loss, audiogram shows a typical notch at

a) 1000 Hz

b) 2000 Hz

c) 3000 Hz

d) 4000 Hz

Correct Answer - D

Ans. is 'd' i.e., 4000 Hz

Noise induced hearing loss

- Exposure to loud noise can lead to permanent hearing threshold shifts.
- This may happen immediately with extreme exposure (nearby explosion or gunfire), but more commonly occurs slowly over time with repeated exposure to industrial or environmental noise.
- Patients will often have a typical 4-KHz (4000 Hz) **notch (dip at 4000 Hz)** in their audiogram called acoustic dip.
- Auditory effects of noise are :?
 1. Auditory fatigue :- at 90 d B and 4000 Hz.
 2. Hearing loss
 3. Temporary :- At 4000 - 6000 Hz
 4. Permanent :- Repeated prolonged exposure to 100 d B or single exposure to 160 d B.

1009. Hearing loss of 65dB, what is the grade of deafness?

a) Mild

b) Moderate

c) Severe

d) Moderately severe

Correct Answer - D

Ans. is 'd' i.e., Moderately severe

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1010. SNHL is seen in all except?

a) Nail patella syndrome

b) Distal RTA

c) Batter syndrome

d) Alport syndrome

e) None

Correct Answer - E

Ans. is 'e' i.e. None

- All the given options are causes of sensorineural hearing loss.

Treacher collin
syndrome

Alport's
syndrome

Pendred
syndrome

Crouzon's
disease

Bartter syndrome

Leopard
syndrome

Refsum
syndrome

Waardenburg
syndrome

Fabry disease

Congenital causes of SNHL

Usher's syndrome

Hurler's syndrome

Klippel feil syndrome

Type 1 (distal) Renal
tubular acidosis

Jervell & lange Neilson
syndrome

Biotinase deficiency

Albinism

MELAS

Trisomy 13, 15, 21

Michel's aplasia

Mondini's anomaly

Schibe's and

Alexander's anomalies

LThl's anomaly

Michel's aplasia

Nail - patella syndrome

Alstrom syndrome

Brachio - oto - renal

(BOR) syndrome

Cockayne's syndrome

1011. All are true about conductive deafness except ?

- a) Rinne's test is negative
- b) Absolute bone conduction is normal
- c) Weber is lateralized to poorer ear
- d) There is decay in threshold tone

Correct Answer - D

Ans. is 'd' i.e., There is decay in threshold tone

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1012. Wave I in brain-stem response audiometry arises from?

- a) Cochlear nerve
- b) Superior olivary complex
- c) Lateral lemniscus
- d) Inferior colliculus

Correct Answer - A

Ans. is 'a' i.e., Cochlear nerve

Brain Stem Response Audiometry (BERA)

- It is a non-invasive procedure which objectively helps to find the integrity of central auditory pathway through the VIII nerve, pons and mid brain. It is accurate to within 10 or 15 dB of the psychoacoustic threshold. It is the most reliable audiological method of differentiating between cochlear and Retrocochlear hearing losses. It is an objective test and can be done under sedation.
- It is used both as a screening test and as a definitive hearing assessment test in children. Best test to detect deafness in infants (reliably recorded even from premature infants of 30 weeks gestational age) and mentally retarded or malingering subjects. It is also used for Identification of the site of lesion in Retrocochlear pathologies and to diagnose brainstem pathology e.g. multiple sclerosis or pontine tumor.

Waves of BERA

- In a normal person, 7 waves are produced in first 10 milliseconds. The first, third and fifth waves are most stable and are used in measurements. Site of origin of waves are :-

Wave I

Distal part of Eighth nerve

Wave II

Proximal, part of Eighth cranial nerve

Wave III	Cochlear nucleus
Wave IV	Superior olivary complex
Wave V	Lateral lemniscus
Wave VI & VII	Inferior colliculus

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1013. Unilateral sensorineural hearing loss may occur in?

a) Coronavirus

b) Mumps

c) Pertussis

d) Rotavirus

Correct Answer - B

Ans. is 'b' i.e., **Mumps**

Infections of labyrinth	Acquired causes	Systemic disorders
Trauma to labyrinth or	of SNHL (DM, Hypothyroidism,	
VIII nerve (Head	Presbycusis	Renal disorders)
injury, surgery etc)	Meniere's disease	Multiple sclerosis
Noise induced hearing	Acoustic neuroma	Smoking & Alcoholism
loss	Sudden hearing	
Ototoxic drugs	loss	

1014. Vestibular function is assessed by ?

- a) Fistula test
- b) Hallpike manaeuver
- c) Caloric test
- d) All of the above

Correct Answer - D
Ans. is 'd' i.e., All of the above

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1015. Most common cause of otomycosis ?

a) Histoplasma

b) Rhinosporidium

c) Aspergillus

d) Actinomyces

Correct Answer - C

Ans. is 'c' i.e., Aspergillus

Otomycosis

- Otomycosis, also called acute fungal otitis externa, describes a fungal or yeast infection of the external auditory meatus.
- Saprophytic fungi potentially residing in the ear canal include Aspergillus, Candida albicans, Phycomycetes, Rhizopus, Actinomyces, and Penicillium.
- Under certain conditions of increased heat, humidity, glucose concentration (diabetes), immunosuppression, or overuse of systemic or topical antibiotics and steroids, these saprophytic fungi can become pathogenic.
- Aspergillus niger accounts for 90% of otomycosis infections.
- Other common organisms are candida albicans (2nd most common) and Aspergillus fumigatus.
- Less common organisms are Phycomycetes, Rhizopus, Actinomyces and Penicillium

1016. Bullous myringitis is caused by?

a) Pseudomonas

b) Mycoplasma

c) Pneumococcus

d) Candida

Correct Answer - B

Ans. is 'b' i.e., Mycoplasma

Otitis externa haemorrhagica

- This condition is also known as Bullous myringitis or myringitis bullosa.
- This condition is extremely painful and has sudden onset.
- It is thought to be due to **mycoplasma pneumoniae** or viral infection, usually influenza
- There may be a mild conductive deafness and a mildly discharging ear.
- The appearance of haemorrhagic bullae on the tympanic membrane and in the deep meatus is characteristic.
- The bullae are filled with serosanguinous fluid and blood.
- On healing, bullae look like Sago-grain.
- Therefore "Sago-grain" appearance of tympanic membrane is seen in healed myringitis bullosa.

1017. Cause of myringosclerosis ?

a) Genetic

b) Grommet insertion

c) Otosclerosis

d) None

Correct Answer - B

Ans. is 'b' i.e., Grommet insertion

Tympanosclerosis

- Tympanosclerosis is a condition in which there is calcification of tissue in the eardrum (tympanic membrane) and middle ear.
- Tympanosclerosis may be classified as : -
 1. Myringosclerosis : - Involving only the tympanic membrane.
 2. Intratympanic tympanosclerosis : - Involving other middle ear sites : ossicular chain or, rarely, the mastoid cavity.
- Exact etiology of tympanosclerosis is not known. It may be an abnormal healing process and most commonly occurs in cases of serous otitis media as a complication of ventilation tube (gourmet) insertion.
- Characteristic chalky white patches are seen on inspection of the eardrum. It is worth noting that cholesteatoma may look similar but the whiteness appears behind, rather than in/on the tympanum.
- Otherwise tympanosclerosis is asymptomatic. Conductive hearing loss may occur in some cases.

1018. Retraction of tympanic membrane touching the promontory. It is called ?

a) Mild retraction

b) Severe retraction

c) Atelectasis

d) Adhesive otitis

Correct Answer - C

Ans. is 'c' i.e., Atelectasis

Tympanic membrane retraction

- The retracted segment of eardrum is often known as a retraction pocket.
- The terms "**atelectasis**" or sometimes "adhesive otitis media" can be used to describe retraction of a large area of the pars tensa.

1019. Retraction of tympanic membrane touching promontory. What is sade's grade?

a) 1

b) 2

c) 3

d) 4

Correct Answer - C

Ans. is 'c' i.e., 3

Atelectic grades of pars tensa

Sade classification::

Grade 1 = slight retraction of TM over the annulus

Grade 2 = the TM touches the long process of the incus

Grade 3 = the TM touches the promontory

Grade 4 = the TM is adherent to the promontory

1020. Most common cause of ASOM is?

a) Meningococci

b) Pneumococci

c) H influenzae

d) Moraxella

Correct Answer - B

Ans. is 'b' i.e., Pneumococci

- ASOM is an acute inflammation of middle ear cleft caused by pyogenic organism.
- It is worth noting that ASOM is the infection of middle ear cleft, i.e., middle ear (tympanic cavity), Eustachian tube, Attic, Aditus, antrum and mastoid air cells.
- ASOM is especially common in infants and children.
- Most of the time ASOM usually follows respiratory tract infections (i.e., acute tonsillitis, common cold or influenza) and the infection travel up by the eustachian tube to the middle ear.
- The most common causative organism is streptococcus pneumoniae. Other common organisms are H. influenzae and Moraxella catarrhalis. Less common causative organisms are streptococcus pyogenes, staphylococcus aureus and E.coli.

1021. Posterosuperior retraction pocket if allowed to progress will lead to?

- a) SNHL
- b) Secondary cholesteatoma
- c) Tympanosclerosis
- d) Primary cholesteatoma

Correct Answer - D

Ans. is 'd' i.e., Primary cholesteatoma

- Retraction pockets are more common in the postero-superior portion of pars-tensa of ear-drum (tympanic membrane).
- Two reasons have been attributed to this features :-
 - 1. This area is more vascular, hence could be subjected to intense inflammatory reaction.
 - 2. Middle fibrous layer in this area is incomplete, lack in circular fibers.
- Long term effects of progressive retraction may be :-
 - 1. Fixation of atrophic segment to bony wall of middle ear cavity.
 - 2. Erosion of ossicles, most commonly long process of incus.
 - 3. Formation of cholesteatoma (primary acquired cholesteatoma).
- "A posterior superior retraction pocket, if allowed to progress, leads to primary acquired cholesteatoma".

Acquired cholesteatoma

In majority of cases cholesteatoma is acquired. Acquired cholesteatoma may be either primary acquired or secondary acquired :?

A. Primary acquired cholesteatoma

- There is no history of previous otitis media or a pre-existing perforation.
- Theories for its genesis are : -

1. Retraction pocket (Wittmaack's theory) : - It is the most accepted theory. There is invagination of pars flaccida in the form of retraction pocket due to negative pressure in middle ear as a result of Eustachian tube dysfunction. There is in growth (migration) of squamous epithelium from the outer layer of tympanic membrane (outer layer of TM is lined by squamous epithelium) through this retraction pocket. Infection supervenes on the impacted squamous epithelium/keratin.
 2. Basal cell hyperplasia (Ruedi's theory) : - There is proliferation of the basal layer of pars flaccida induced by subclinical childhood infections. These proliferating basal cells lay down keratinizing squamous epithelium.
 3. Squamous metaplasia (Sade's theory) : - Pavement epithelium of attic undergoes metaplasia and transforms into squamous epithelium due to subclinical infections.
- B. Secondary acquired cholesteatoma
- There is pre-existing perforation in pars tensa.
 - Theories on its genesis include : -
1. Epithelial invasion (Habermann's theory) : - The epithelium from the meatus or outer drum surface grows into the middle ear through a pre-existing perforation especially of the marginal type where part of annulus tympanicus has already been destroyed.
 2. Metaplasia : - Middle ear mucosa undergoes metaplasia due to repeated infections of middle ear through the pre-existing perforation.

1022. Treatment of choice for atticotral type of CSOM?

- a) Antibiotics
- b) Tympanoplasty
- c) Modified radical mastoidectomy
- d) None

Correct Answer - C

Ans. is 'c' i.e., Modified radical mastoidectomy

Treatment of atticotral disease

- Since cholesteatoma is going to expand and destroy bone and mucous membrane, it has to be removed.
- Therefore, surgery is the mainstay of treatment.
- Primary aim is removal of disease by mastoidectomy to make ear safe followed by reconstruction of hearing at a later stage.
- **Modified radical mastoidectomy is the surgery of choice.**
- Two types of surgical procedures (mastoidectomy) are done to deal with cholesteatoma:-
 1. Canal wall down procedures
- These leave the mastoid cavity open into the external auditory canal so that the diseased area is fully exteriorized.
- The commonly used procedures for atticotral disease are atticotomy, modified radical mastoidectomy and rarely radical mastoidectomy.
- Modified radical mastoidectomy is the procedure of choice.
 2. Canal wall up procedures (cortical mastoidectomy)
- Here disease is removed by combined approach through the meatus and mastoid but retaining the posterior bony meatus wall, thereby avoiding an open mastoid cavity.

- For reconstruction of hearing mechanism myringoplasty or tympanoplasty can be done at the time of primary surgery or as a second stage procedure.

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1023. Cart-wheel appearance of tympanic membrane in ASOM is due to ?

- a) Perforation of tympanic membrane
- b) Edema of tympanic membrane
- c) Congested blood vessels along malleus
- d) Granulation tissue on tympanic membrane

Correct Answer - C

Ans. is 'c' i.e., Congested blood vessels along malleus

Stages of ASOM

- ASOM runs through the following stages and therefore presentation depends upon the stage :
 1. Stage of tubal occlusion (Eustachian tube obstruction)
- Edema and hyperaemia of nasopharyngeal end of Eustachian tube blocks the tube, leading to absorption of air and negative intratympanic pressure.
- There is feeling of discomfort and mild hearing loss (conductive) with pink retracted tympanic membrane.
- 2. Stage of presuppuration (Early infection)
- There is collection of inflammatory exudate behind the tympanic membrane.
- There is *marked Throbbing earache, hearing loss, tinnitus* and fever.
- **Tympanic membrane is congested. Leash of blood vessels appear along the handle of malleus and at the periphery of tympanic membrane imparting it a Cart-wheel appearance.**
- 3. Stage of suppuration (suppurative stage)
- There is collection of frank pus in the middle ear.
- Patient has excruciating earache, hearing loss, and constitutional symptoms like high grade fever.

- Tympanic membrane is red and bulging with loss of landmarks.
- 4. Stage of resolution (Resolution stage)
- The tympanic membrane ruptures with release of pus and subsidence of symptoms.
- Earache is relieved, fever comes down and child feels better.

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1024. X-ray findings in chronic otitis media ?

- a) Honeycombing of mastoid
- b) Sclerosis with cavity in mastoid
- c) Clear-cut distinct bony partition between cells
- d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Sclerosis with cavity in mastoid

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1025. Delta-sign is seen in ?

- a) Petrositis
- b) Acute mastoiditis
- c) Sigmoid sinus thrombosis
- d) Glomus tumor

Correct Answer - C

Ans. is 'c' i.e., Sigmoid sinus thrombosis

- Contrast-enhanced CT scan can show sinus thrombosis by typical *delta-sign*. It is a triangular area with rim enhancement, and central low density area is seen in posterior cranial fossa on axial cuts.
- Delta-sign may also be seen on contrast enhanced M RI.

1026. Blue ear drum is seen in ?

a) Serous otitis media

b) CSOM

c) Perforation

d) None

Correct Answer - A

Ans. is 'a' i.e., Serous otitis media

- Any accumulation of fluid behind tympanic membrane causes structural changes in tympanic membrane causing it to appear blue, be it pus, blood or serous fluid.
- The most common cause of fluid accumulation in middle ear is **serous otitis media** or glue ear (most common cause) and haemotympanum.
- Other causes of blue tympanic membrane are glomus tumor, hemangioma of middle ear, and cholesterol granuloma.

1027. All are intracranial complications of otitis media except?

a) Lateral sinus thrombophlebitis

b) Facial nerve palsy

c) Brain abscess

d) Hydrocephalus

Correct Answer - B

Ans. is 'b' i.e., Facial nerve palsy

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Intracranial Complications from Otitis Media

- Intracranial complications occur after the infectious (or inflammatory) process proceeds beyond the temporal bone "requiring immediate and precise therapeutic intervention."
- Most common intracranial complications include meningitis, followed by **brain abscess** and **lateral sinus thrombosis**, subdural empyema, epidural abscess, and **otic hydrocephalus**.

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1028. Gradenigo syndrome is characterized by all except ?

- a) Diplopia
- b) Retro-orbital pain
- c) Persistent ear discharge
- d) Vertigo

Correct Answer - D

Ans. is d i.e., Vertigo

Infection of mastoid and middle ear may be complicated by the spread of infection within the temporal bone into *petrous apex*. Petrositis is an extension of infection from middle ear and mastoid to the petrous part of the temporal bone.

Gradenigo's syndrome is the classical presentation and consists of a triad of : -

- *External rectus palsy (VIth nerve/abducent nerve palsy) causing diplopia.*
- *Deep seated orbital or retroorbital pain (Vth nerve involvement).*
- *Persistent ear discharge due to ipsilateral acute or chronic otitis media.*

Associated symptoms of otitis media are also present e.g., *conductive deafness*. Other symptoms are fever, headache, vomiting, and sometimes neck rigidity. Some patient may get facial paralysis and recurrent vertigo due to involvement of facial and statoacoustic nerves.

1029. True about tubercular otitis media are all except?

- a) Spreads through eustachian tube
- b) Causes painless ear discharge
- c) May cause multiple perforations
- d) Usually affects both ears
- e) None

Correct Answer - D

Answer- D. Usually affects both ears

- Tuberculosis of middle ear is a comparatively rare entity usually seen in association with or secondary to pulmonary tuberculosis, infection reaches the middle ear through eustachian tube.
Clinical features
- Generally, tuberculosis of middle ear is unilateral.
- It is characterized by painless otorrhoea which fails to respond to the usual antimicrobial treatment. There is painless watery otorrhea.
- Single or multiple perforation of tympanic membrane.

1030. Frey's syndrome is caused by ?

- a) Post traumatic nerve fibres of facial nerve with parasympathetic of auriculotemporal nerve
- b) Greater auricular with auriculotemporal nerve
- c) Facial nerve with greater auricular nerve
- d) None

Correct Answer - A

Ans. is 'a' i.e., Post traumatic nerve fibres of facial nerve with parasympathetic of auriculotemporal nerve

Frey's syndrome (gustatory sweating)

- Gustatory sweating or Frey's syndrome involves post-parotidectomy facial sweating and skin flushing while eating.
- The symptoms usually occur several months or even years after parotid surgery.
- The likely pathophysiology is aberrant regeneration of postganglionic secretomotor parasympathetic nerve fibres (originating from the otic ganglion) misdirected through several axonal sheaths of postganglionic sympathetic fibres feeding the sweat glands. These sympathetic fibres are to the sweat glands of the skin in the dissected field.
- The Frey's syndrome is likely due to injury to auriculotemporal nerve with faulty regeneration, therefore Frey's syndrome is also known as Auriculotemporal syndrome.
- A variant of Frey's syndrome in which there is gustatory facial flushing but not sweating, occurs following facial paralysis due to faulty regeneration following injury to the facial nerve. So, Frey's syndrome is not limited to parotid surgery with injury to auriculotemporal nerve.

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1031. Facial nerve palsy can be caused by ?

a) Cholesteatoma

b) Multiple sclerosis

c) Mastoidectomy

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Causes of facial paralysis

- Central :- Brain abscess, pontine glioma, Polio, multiple sclerosis
- Intracranial part (cerebellopontine angle) :- Acoustic neuroma, meningioma, congenital cholesteatoma, metastatic carcinoma, meningitis
- Intratemporal part :-
- Idiopathic :- Bell's palsy, Melkersson's syndrome
- Infections :- ASOM, CSOM, Herpes zoster oticus, malignant otitis externa
- Trauma :- Surgical (mastoidectomy, stapedectomy), accidental (fractures of temporal bone)
- Neoplasms :- Malignancies of external and middle ear, glomus jugular, facial nerve neuroma, metastasis (from breast, lung etc).
- Extracranial part :- Malignancies or surgery or injury to parotid gland
- Systemic diseases :- Diabetes, hypothyroidism, uremia, PAN, Sarcoidosis (Heerfordt's syndrome), leprosy, leukaemia, demyelinating disease

1032. Defective function of which of the following causes hyperacusis ?

- a) VIII nerve
- b) 7th nerve
- c) Stapedius muscles
- d) Any of the above

Correct Answer - D

Ans. is 'd' i.e., Any of the above

Hyperacusis

- Hyperacusis is hearing normal voice as louder.
- The protective mechanisms a normal ear employs to minimize the harmful effects of loud noise are malfunctioning in hyperacusis.
- So, noise may seem too loud even with hearing protection.
- There is some speculation that the *efferent portion of the auditory nerve* is selectively damaged while the hair cells that allow us to hear pure tones in an audiometric evaluation remains intact.
- Some have said it involves *direct malfunction of facial nerve*; as a result, *the stapedius muscle* is unable to dampen sound.

1033. Hyperacusis is defined as:

- a) Hearing of only loud sound
- b) Normal sounds heard as loud and painful
- c) Completely deaf
- d) Ability to hear in noisy surroundings

Correct Answer - B

Sensation of discomfort or pain on exposure to normal sounds. Seen in injury to nerve to stapedius and in case of congenital syphilis (Hennebert sign)

1034. Schwartze sign seen in?

- a) Glomus Jugulare
- b) Otosclerosis
- c) Meniere's diseases
- d) Acoustic neuroma

Correct Answer - B

Ans. is 'b' i.e., Otosclerosis

Symptoms of otosclerosis

- Hearing loss :- Bilateral conductive deafness which is painless and progressive with insidious onset. In cochlear otosclerosis sensorineural hearing loss also occur along with conductive deafness.
- Paracusis willissii :- An otosclerotic patient hears better in noisy than quiet surroundings.
- Tinnitus :- More common in cochlear otosclerosis.
- Speech :- Monotonous, well modulated soft speech.
- Vertigo :- is uncommon.

Signs in otosclerosis

- Tympanic membrane is quite normal and mobile.
- In 10% of cases flamingo - pink blush is seen through the tympanic membrane called as Schwartze sign.
- Various tests show conductive hearing loss.

Tuning fork tests in otosclerosis

- As otosclerotic patients have conductive deafness, the tuning fork tests results will be as follows :?
 1. Rinnes :- Negative
 2. Webers :- Lateralized to the ear with greater conductive loss.
 3. Absolute bone conduction (ABC) :- Normal (can be decreased in

cochlear otosclerosis).

- l. Gelles test :- No change in the hearing through bone conduction when air pressure of ear canal is increased by Siegle's speculum.

Audiometry in otosclerosis

- Audiometry is one of the important tools in evaluation of a patient of otosclerosis. Various audiometric tests are :?
 1. Pure tone audiometry
 - .. Shows loss of air conduction, more for lower frequencies with characteristic rising pattern. Bone conduction is normal. However in some cases, there is a dip in bone conduction curve which is maximum at 2000 Hz (2 KHz) and is called the Carhart's notch.
 2. Impedance audiometry
- Impedance audiometry shows :-
- Tympanometry
- Patient with early disease may show type A tympanogram (because middle ear aeration is not affected) Progressive stapes fixation results in classical As type tympanogram.
- Acoustic (stapedial reflex)
- It is one of the earliest sign of otosclerosis *and preceedes the development of airborne gap. In early stage, diphasic on-off pattern is seen in which there is a brief increase in compliance at the onset and at the termination of stimulus occurs. This is pathognomonic of otosclerosis. In later stage the reflex is absent.*

1035. Galle's test is used for ?

a) Otosclerosis

b) Juvenile angiofibroma

c) Nasal polyp

d) None

Correct Answer - A

Ans. is 'a' i.e., Otosclerosis

Galle's test

- It is a bone conduction test and examines the effect of increased air pressure in ear canal on hearing.
- Increased air pressure in ear canal (by Siegle's speculum) pushes the tympanic membrane and ossicles inwards which raises the intralabyrinthine pressure and causes immobility of basilar membrane and decreased hearing.
- However, if ear ossicles are already fixed or disconnected, the pressure cannot be transferred to inner ear
- No change in hearing in this situation.
- Base of vibrating tuning fork is placed on mastoid process and air pressure in ear canal increased (by Siegle's speculum).
- Interpretation are : -
- Positive Galle's (decreased hearing on increased pressure) → Normal or sensorineural hearing loss. h)
- Negative Galle's (No effect of pressure change in hearing) → Disconnected or fixed ossicular chain.

1036. Most common bone affected by otosclerosis

a) External auditory canal

b) Bony labyrinth

c) Mastoid process

d) None

Correct Answer - B

Ans. is 'b' i.e., Bony labyrinth

- Otosclerosis is a primary disease of the bony labyrinth.
- There is abnormal bone growth that causes hearing loss.
- There is altered bone remodeling.
- Normally, the typical human otic capsule remodeling rate is extremely low.
- In otosclerosis, normal inhibition of bone remodeling is lost resulting in foci of bone remodeling.
- When remodeled bone bridges the stapediovestibular joint, it fixates the joint and impedes sound transmission manifested as conductive hearing loss.
- The most common site of disease is promontory in the region of the anterior margin of oval window, and in advanced cases the stapes become ankylosed in position by a mass of new spongy bone.
- Other sites, which may be involved, are round window area, stapedial footplate, internal auditory canal, and semicircular canal.

1037. In otosclerosis, which is most affected?

a) Oval window

b) Round window

c) Foot plate of stapes

d) Utricle

Correct Answer - A

Ans. is 'a' i.e., Oval window

- The most common site of disease is promontory in the region of the anterior margin of oval window, and in advanced cases the stapes become ankylosed in position by a mass of new spongy bone.
- Why is it so ?
- This area is involved most commonly because in this area is located the **fissula ante fenestram**, a vestigial structure which frequently contains cartilaginous remnants and which is particularly prone to otosclerotic changes.

Most common type of otosclerosis → Stapedial otosclerosis

Most common site of otosclerosis → Fissula ante fenestram (i.e, just in front of oval window)

Most common site for Stapedial otosclerosis → Fissula ante fenestram (i.e, just in front of oval window)

Most common site for cochlear otosclerosis → Round window

1038. In otosclerosis, the tympanogram is:

a) Low compliance

b) High compliance

c) Normal compliance

d) None of the above

Correct Answer - A

In otosclerosis - As type curve is seen which is a low compliance curve.

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1039. Endolymphatic sac decompression is done in?

- a) Menieres disease
- b) Otosclerosis
- c) Otitis media
- d) Vestibular schwannoma

Correct Answer - A

Ans. is 'a' i.e., Menieres disease

Treatment of Meniere's disease

- Most treatments are for symptoms believed to be caused by excess endolymphatic fluid. Treatment of Meniere's disease is of two types :?
 - A) Medical management
 - B) Surgical management
- Medical management:
- Treatment of Meniere's disease begins first with medical management.
- Medical treatment controls the condition in over two third of patients.
- Medical management includes :?
 - 1. Antihistamine labyrinthine sedatives (vestibular sedatives)**
 - Many cases can be controlled by vestibular sedatives like prochlorperazine, promethazine, dimenhydramine, and cinnarizine.
 - 2. Anxiolytic and tranquillizers**
 - Many patients are anxious, therefore they may be helped by anxiolytic and tranquillizers like diazepam.
 - 3. Vasodilators**
 - Betahistine hydrochloride appears to be the most useful recent addition to the medical armamentarium and is routinely prescribed

for most patients. It increases labyrinthine blood flow by releasing histamine.

- Other vasodilators employed include nicotinic acid, thymoxamine, inhaled carbogen (5% CO₂ with 95% O₂), and histamine drip.
- Vasodilators increase vascularity of endolymphatic sac and its duct **and** thereby increases reabsorption of endolymphatic fluid.

4. Diuretics (furosemide)

- Diuretics with fluid and salt restriction can help to control recurrent attacks if not controlled by vestibular sedatives or vasodilators.

5. Other drugs

- Propantheline bromide, phenobarbitone and hyoscine are effective alternatives.
- Surgical management
- Surgical therapy for mende's disease is reserved for medical treatment failures and is otherwise controversial. Surgical procedures can be divided into two main categories
- Destructive surgical procedures
- Nondestructive surgical procedures
- Destructive surgical procedures : rationale is to control vertigo. Endolymphatic hydrops causes fluid pressure accumulation within the inner ear, which causes temporary malfunction and misfiring of the vestibular nerve. These abnormal signals cause vertigo. Destruction of the inner ear and / or the vestibular nerve prevents these abnormal signals. The procedures performed are :
 - Labyrinthectomy
 - Intermittent low pressure pulse therapy (Meniett device therapy)
- Conservative surgical procedures : are used in cases where vertigo is disabling but hearing is still useful & needs to be preserved. They are :
 - **Decompression of endolymphatic sac**
 - Endolymphatic shunt operation
 - Sacculotomy (Fick's operation & Cody's tack procedure)
 - Vestibular neurectomy
 - Ultrasonic destruction of vestibular labyrinth to preserve cochlear function.
 - Stellate ganglion block or cervical sympathectomy
 - Intratympanic gentamycin

- Vestibular nerve section

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1040.

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Glomus tumor invading the vertical part of carotid canal. It is ?

a) Type B

b) Type C1

c) Type C2

d) Type C3

Correct Answer - C

Ans. **is** `c' i.e., Type **C2**

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1041. FISCH classification is used for:

- a) Juvenile nasopharyngeal angiofibroma
- b) Nasopharyngeal ca
- c) Vestibular schwannoma
- d) Glomus tumour

Correct Answer - D

A classification system (A-D) describing glomus tumors based on anatomic location and size, with larger lettering representing more extensive tumors.

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1042. Site of glomus jugulare?

a) Epitympanum

b) Hypotympanum

c) Mesotympanum

d) Internal ear

Correct Answer - B

Ans. is 'b' i.e., Hypotympanum

Glomus tumor

- Glomus tumor is the most common benign tumor of middle ear.
- It arises from the glomus bodies, therefore named Glomus tumor.
- It is well recognised that glomus tumors arise from paraganglions, which are normally occurring structures usually found in close association with sympathetic ganglions along the aorta and its main branches.
- The chief cells (paraganglionic cells) of the paraganglions are of neural crest origin and are components of the diffuse neuroendocrine system (DNES).
- These paraganglionic cells are derived from embryonic neuroepithelium (neural crest).
- Glomus tumors are also referred to as chemodectomas or nonchromaffin paragangliomas.
- There are two types of glomus tumors :-
- Glomus jugulare
- These glomus tumors arise from the dome of the internal jugular vein in the hypotympanum and jugular foramen. In jugular foramen they can invade IX to XII cranial nerves.
- Glomus tympanicum
- They arise from the promontory of the middle ear along the course

- of the tympanic branch of the IXth cranial nerve.
- Although rare, glomus tumors are the most common tumor of the middle ear and are second to acoustic neuroma (vestibular schwannoma) as the most common tumor of the temporal bone.
 - It is more common in females with female to male ratio of 3-6 : 1.
 - Glomus jugulare tumors have also been noted to be more common on the left side, especially in females.
 - Most tumors occur in patient 40-60 years.
 - Multicentric tumors are found in 3-10% of sporadic cases and in 25-50% of familial cases.

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1043. "Rising sun" appearance is seen in -

- a) ASOM
- b) CSOM
- c) Glomus tumor
- d) Acoustic neuroma

Correct Answer - C

Ans. is 'c' i.e., Glomus tumor

Clinical features of glomus tumor

- The earliest symptoms of glomus tumour is pulsatile tinnitus (earliest) and hearing loss. Hearing loss is conductive and slowly progressive. These are followed by blood stained otorrhoea and earache.
- Before the tympanic membrane (eardrum) is perforated a red swelling is seen to arise from the floor of middle ear, i.e. **"Rising sun" appearance**. This results in a red reflex through the intact tympanic membrane.
- Sometimes, eardrum may be bluish and bulging. o Pulsation sign (Brown sign) is positive, i.e. when ear canal pressure is raised with Siegle's speculum, tumor pulsates vigorously and then blanches; reverse happens with release of pressure.
- Aquino sign is positive, i.e. blanching of mass with manual compression of ipsilateral carotid artery.
- When the tumour perforates the eardrum a polypus will be seen in the meatus and this will bleed profusely if touched.
- Cranial nerve palsies is a late feature appearing several years after aural symptoms. IXth to XIVth cranial nerves may be paralysed. This can cause dysphagia and hoarseness, and weakness of trapezius and sternocleidomastoid muscles, unilateral paralysis of soft palate,

- pharynx and vocal cord.
- Auscultation with stethoscope over the mastoid may reveal audible systolic bruit.
 - Some glomus tumours secrete catecholamines and produce symptoms like tachycardia, arrhythmias, sweating, flushing and headache etc.
 - Facial palsy may be caused by glomus tympanicum type of glomus tumor.
 - Audiometry shows conductive deafness, However if inner ear is invaded, mixed conductive and sensorineural hearing loss is seen.

1044. All of the following cranial nerves are involved in Acoustic neuroma, except ?

a) Vagus

b) Glossopharyngeal

c) Oculomotor

d) Facial

Correct Answer - C

Ans. is 'c' i.e., Oculomotor

Clinical features of acoustic neuroma

- The clinical features depend on the extent of tumor and involved structure :?
- When tumor is still confined to the internal auditory canal
- Cochleovestibular symptoms are the earliest symptoms of acoustic neuroma when tumour is still confined to internal auditory canal. The commonest presenting symptoms are unilateral deafness or tinnitus, or a combination of both. Hearing loss is retrocochlear sensorineural type. There is marked difficulty in understanding speech, out of proportion to the pure tone hearing loss, a characteristic feature of acoustic neuroma. Vestibular symptoms are imbalance or unsteadiness. True vertigo is very rare.
- When tumor extends beyond IAC and involves other structures
- V^hcranial nerve :- It is the earliest nerve to be involved. There is reduced corneal sensitivity and loss of corneal reflex which is the earliest sign of acoustic neuroma. Numbness or paraesthesia of face may occur. Involvement of Vth nerve indicates that tumor is roughly 2.5 cm in diameter and occupies the CP angle.
- VIP nerve :- Sensory fibres of facial nerve are involved. There is hypoesthesia of posterior meatal wall (Hitzelberg's sign), loss of

taste, and loss of lacrimation on Schirmer's test. Motor fibres are more resistant.

- IXth and A' nerves :- Dysphagia and hoarseness due to palatal, pharyngeal and laryngeal paralysis.
- Brainstem :- Ataxia, weakness, numbness of arms & legs, exaggerated tendon reflexes.
- Cerebellum :- Ataxia, Dysdiadochokinesia, Nystagmus.
- Due to raised ICT :- Headache, neusea, vomiting, diplopia due to VI' nerve involvement, and papilloedema.

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1045. Associated with objective tinnitus?

a) Meiners disease

b) Acoustic neuroma

c) Ear wax

d) Glomus tumor

Correct Answer - D

Ans. is 'd' i.e., Glomus tumor

Tinnitus

- Tinnitus is ringing sound or noise in the ear.
- The characteristic feature is that the origin of this sound is within the patient.
- Two types of tinnitus have been described : ?

a. Subjective

I. Otologic

- Impacted wax
- Fluid in the middle ear
- Acute and chronic otitis media
- Abnormally patent eustachian tube
- Meniere's disease
- Otosclerosis

II . Non-otologic

Disease of CNS
Anaemia
Arteriosclerosis
Hypertension
Hypotension
Hypoglycaemia

1046. Referred ear pain may travel through all except?

- a) Trigeminal nerve
- b) Glossopharyngeal nerve
- c) Abducens nerve
- d) Vagus nerve

Correct Answer - C

Ans. is 'c' i.e., Abducens nerve

Referred otalgia

- As ear receives nerve supply from Vth (auriculotemporal branch), IXth (tympanic branch) and Xth (auricular branch) cranial nerves; and from C₂ (lesser occipital) and C₂ and C₃ (greater auricular), pain may be referred from these remote areas:

1. Via Vth cranial nerve

- 1. Dental : - Caries tooth, apical abscess, impacted molar, malocclusion.
 - 2. Oral cavity : - Benign or malignant ulcerative lesions of oral cavity or tongue.
 - 3. Temporomandibular joint disorders : - Bruxism, osteoarthritis, recurrent dislocation, ill-fitting denture.
 - 4. Sphenopalatine neuralgia
- Vi intensity will hear it. Therefore, if identical vibrating tuning forks are held at equal distances from both ears they are heard in both ears. However, if one tuning fork is moved closer to one ear the person hears only that fork although the other fork is still vibrating sufficiently for him to hear. In stenger test, two vibrating tuning forks are held equidistant from either ear. If the patient is claiming

deafness in his left ear he will claim to hear only the fork on his right side. The fork on the left side is moved closer. If the patient is feigning deafness he will perceive only the tuning fork on the left side and will claim not to hear anything. If the patient has a genuine hearing loss on the left he will still hear the tuning fork on the right side.

2. Teal test

- This can be used when the patient admits to hearing bone conduction in his 'deaf' ear. The examiner stands behind the patient and applies a tuning fork to the mastoid process of his 'deaf' ear. The patient admits to
 - a IXth cranial nerve
 - .. Oropharynx : - Acute tonsillitis, peritonsillar abscess, tonsillectomy. Benign or malignant ulcers of soft palate, tonsil and its pillars.
 - 2.. Base of tongue : - Tuberculosis or malignancy
 - 3.. Elongated styloid process.

3. Via Xth cranial nerve :

- Malignancy or ulcerative lesion of vallecula, epiglottis, larynx or laryngopharynx, oesophagus.

4. Via C₂ and C₃ spinal nerves :

- Cervical spondylosis, injuries of cervical spine, caries spine.

1047. Electrode of cochlear implant is placed at ?

a) Horizontal semicircular canal

b) Scala media

c) Scala tympani

d) Scala vestibuli

Correct Answer - C

Ans. is 'c' i.e., Scala tympani

[Ref Essentials otolaryngology 2d/e p. 82]

Cochlear implants

- Internal component : -
- It contains receiver/stimulator which is implanted under the skin and electrode which is implanted in the scala tympani of the cochlea a cochleostomy opening in the basal turn of cochlea.
- It may also be placed at other locations like promontory or round window but these sites has poorer performance.

1048. Fracture of which of the following bone causes leakage of cerebrospinal fluid through ear ?

a) Mastoid process

b) Petrous temporal

c) Ethmoid plate

d) Cribriform plate

Correct Answer - B

Ans. is 'b' i.e., Petrous temporal

CSF otorrhea

- CSF otorrhea, i.e., *leakage of cerebrospinal fluid through ear structure*, is a rare but potentially life threatening situation that requires rapid intervention.
- The underlying etiology of spinal fluid leak *through temporal bone* is a violation of the bony and meningeal barriers that separate the subarachnoid space from the middle ear and mastoid.
- This means that a defect must exist not only in the bone, but also in the dura matter.
- Causes of CSF otorrhea are : ?
 1. Congenital:- Defect in otic capsule.
 2. Acquired:- *More common* than congenital and cause are : -
 1. Surgery:- Post-operative leakage is the most common cause of CSF otorrhea. Surgical causes are acoustic neuroma removal, skull base surgeries and sometimes mastoid surgery.
 2. Trauma:- Fracture of petrous part of temporal can lead to CSF otorrhea.
 3. Infection

3. Spontaneous:- It is without an obvious antecedent pathology.
There may be some defect in the temporal bone.

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1049. Indication of BAHA (Bone-anchored hearing aid)

- a) Bilateral hearing loss
- b) Sensorineural hearing loss
- c) Congenital canal atresia
- d) All of the above

Correct Answer - C

Ans. is 'c' i.e., Congenital canal atresia

Indications for BAHA

- When air-conduction (AC) hearing aid cannot be used;
- Canal atresia, congenital or acquired, not amenable to treatment.
- Chronic ear discharge, not amenable to treatment.
- Excessive feedback and discomfort from air-conduction hearing aid.
- Conductive or mixed hearing loss, e.g. otosclerosis and tympanosclerosis where surgery is contraindicated.
- Single-sided hearing loss.

1050. Muller's manoeuver is used ?

- a) To findout opening of mouth
- b) To remove laryngeal foreign body
- c) To find degree of obstruction in sleep disordered breathing
- d) To remove foreign body from ear

Correct Answer - C

Ans. is 'c' i.e., To find degree of obstruction in sleep disordered breathing

Muller's manoeuvre

- **Used to find the level and degree of obstruction in sleep-disordered breathing.**
- It is performed while using flexible nasopharyngoscope.
- First the examiner sees the upper airways at rest and then during the time when patient makes maximal inspiratory effort with nose and mouth closed.
- Base of tongue, lateral pharyngeal wall and palate are examined for collapsibility and then rated from 0 (minimal collapse) to 4+ (complete collapse).

1051. Hyponasal voice is seen in all except ?

a) Adenoids

b) Nasal polyp

c) Cleft palate

d) Habitual

Correct Answer - C

Ans. is 'c' i.e., Cleft palate

- Cause of hyponasality and hypernasality

Hyponasality

Common cold

Nasal allergy

Nasal polyp

Nasal growth

Adenoids

Nasopharyngeal mass

Familial speech pattern

Habitual

Habitual speech pattern

Hypernasality

Velopharyngeal insufficiency

Congenitally short soft palate

Submucous palate

Large nasopharynx

Cleft of soft palate

Paralysis of soft palate

Post-adenoidectomy

Oronasal fistula Familial speech pattern

1052. Major contribution in the formation of nasal septum is by all except ?

a) Septal cartilage

b) Vomer

c) Ethmoid

d) Nasal bone

Correct Answer - D

Ans. is '**d**' i.e., Nasal bone

- The medial wall, or **nasal septum**, is **formed** (from anterior to posterior) by :
 - (1) the **septal** cartilage (destroyed in a dried skull)
 - (2) the perpendicular plate of the **ethmoid bone**, and
 - (3) the **vomer** . It is usually deviated to one side.
- The vomer contributes to the inferior portion of the **nasal septum**; the perpendicular plate of the ethmoid bone contributes to the superior portion.

1053. True about external nose ?

- a) Upper 2/3 is bony
- b) Lower 1/3 is cartilaginous
- c) Single lateral cartilage
- d) Two nasal bones

Correct Answer - D

Ans. is'd' i.e., Two nasal bones

- External nose has an osteocartilaginous framework of which **upper one - third is bony** and **lower two-third is cartilaginous**.
 - .. **Bony part** :- Consists of **two nasal bones**.
 - .. **Cartilagenous part** :- Consists of two upper lateral cartilages, two lower lateral cartilages, two or more lesser alar (or sesmoid) cartilages and a septal cartilage. So, there are 3 paired and 1 unpaired cartilages.

1054. All of the following arteries contributes to Little's area EXCEPT:

a) Anterior Ethmoidal artery

b) Posterior Ethmoidal artery

c) Sphenopalatine artery

d) Greater palatine artery

Correct Answer - B

Kiesselbach's plexus

- It lies in Kiesselbach's area/ Kiesselbach's triangle/ Little's area
- It is a region in the anteroinferior part of the nasal septum where four arteries anastomose to form a vascular plexus of that name. The arteries are:
 - Anterior Ethmoidal artery (from the Ophthalmic artery)
 - Sphenopalatine artery (terminal branch of the Maxillary artery)
 - Greater palatine artery (from the Maxillary artery)
 - Septal branch of the superior labial artery (from the Facial artery)
- Although the Posterior Ethmoidal artery also supplies the septum of the nose, it does not contribute to the plexus.

1055. What is not true about use of intranasal steroids in nasal polyposis?

- a) Reduce recurrence
- b) Reduce obstruction
- c) Effective in eosinophilically predominant polyp only
- d) May cause epistaxis

Correct Answer - C

Ans. is 'c' i.e., Effective in eosinophilically predominant polyp only

- Intranasal steroids have been used extensively as first-line management of nasal polyposis with few side effects
- Usually, patients with small polyps and limited involvement on CT scan are good candidates for topical therapy alone.
- Intranasal steroids reduce **nasal obstruction, polyp size, drainage and polyp recurrence.**
- The effect of steroids seems to be nonspecific, improving symptoms in both **eosinophilically and noneosinophilically dominated polyps.**
- **Nasal bleeding is the most common adverse event** and can usually be minimized by directing the medication away from nasal septum.

1056. All are true about Rhinoscleroma, except ?

- a) Mikulicz cells
- b) Caused by fungus
- c) More common in Northern area
- d) Woody nose

Correct Answer - B

Ans. is 'b' i.e., Caused by fungus

- Rhinoscleroma is caused by a bacterium.

Rhinoscleroma

- The causative organism is *Klebsiella rhinoscleromatis* or Frisch bacillus, which can be cultured from the biopsy material.
- The disease is endemic in several parts of world.
- In India, it is seen more often in northern than in the southern parts.
- Biopsy shows infiltration of submucosa with plasma cells, lymphocytes, eosinophils, Mikulicz cells & Russell bodies.
- The latter two are diagnostic features of the disease.
- The disease starts in the nose & extends to nasopharynx, oropharynx, larynx, trachea & bronchi.

Mode of infection is unknown.

- Both sexes of any age may be affected.
- Clinical features of rhinoscleroma
- The disease runs through the following stages :?
 - a. **Atrophic stage** : It resembles atrophic rhinitis and is characterised by foul smelling purulent nasal discharge and crusting.
 - b. **Granulomatous stage** : Granulomatous nodules form in nasal mucosa. There is also subdermal infiltration of lower part of external nose and upper lip giving a 'woody' feel. Nodules are painless and

non-ulcerative.

c. Cicatricial stage : This causes stenosis of nares, distortion of upper lip, adhesions in the nose, nasopharynx and oropharynx.

There may be subglottic stenosis with respiratory distress.

- Biopsy of rhinoscleroma shows infiltration of submucosa with plasma cells, lymphocytes, eosinophils, Mikulicz cells and Russell bodies. The latter two are the diagnostic features of the disease.
- Treatment
- Both streptomycin & tetracycline are given together for minimum of 4-6 wks. Steroid can be combined to reduce fibrosis. Surgical treatment may be required to establish the airway and correct nasal deformity

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1057. All are seen in Samters triad except?

a) Asthma

b) Nasal polyp

c) Bacterial infection

d) Aspirin sensitivity

Correct Answer - C

Ans. is 'c' i.e., Bacterial infection

Samter's triad

- Samter's triad is a medical condition consisting of asthma, aspirin sensitivity, and nasal ethmoidal polyposis. It occurs in middle age (twenties and thirties are the most common onset times) and may not include any allergies. o Most commonly, the first symptom is rhinitis.
- The disorder typically progresses to asthma, then polyposis, with aspirin sensitivity coming last.
- The aspirin reaction can be severe, including an asthma attack, anaphylaxis, and urticaria in some cases. Patients typically react to other NSAIDs such as ibuprofen, although paracetamol is generally considered safe.
- Anosmia (lack of smell) is also typical, as the inflammation reaches the olfactory receptors in the nose.

1058. Strawberry appearance is seen in ?

a) Lupus vulgarsis

b) Rhinoscleroma

c) Rhinosporidiosis

d) Angiofibroma

Correct Answer - C

Ans. is 'c' i.e., Rhinosporidiosis

Rhinosporidiosis

- Rhinosporidiosis is a chronic granulomatous infection of the mucous membrane that usually manifests as vascular friable polyps that arise from the nasal mucosa. The etiological agent is *Rhinosporidium seeberi*. *Rhinosporidium seeberi* is an aquatic bacterium (not a fungus). Infection usually results from a local traumatic inoculation with the organism. It is seen in India, Pakistan and Sri Lanka. In India, most of the cases are seen in Southern states. Infection of the nose and nasopharynx is observed in 70% of persons with rhinosporidiosis; infection of palpebral conjunctiva or associated structures (including lacrimal apparatus) is observed in 15% of cases. Other structures of the mouth and upper airway may be sites of disease. Disease of the skin, ear, genitals and rectum has also been described. Rhinosporidiosis is an infection that typically limited to the mucosal epithelium. The disease progress with local replication of *R seeberi* and associated hyperplastic growth of host tissue and a localized immune response.
- Clinical features of Rhinosporidiosis
- Rhinosporidiosis presents as soft leafy polypoidal mass (soft polyp), which is pink to purple in colour studded with white dots, i.e. **strawberry appearance**. This appearance results from sporangia,

which is visible as grey or yellow spots in the vascular polypoid masses. Because the polyps are vascular and friable, they bleed easily upon manipulation.

Treatment

- The treatment of choice is surgical excision. Complete excision of mass is done with diathermy knife and cauterization of base. Dapsone is being tried for treating rhinosporidiosis but with limited success.

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1059. True about rhinophyma:

a) Premalignant

b) Common in alcoholics

c) Acne rosacea

d) Fungal etiology

Correct Answer - C

- Rhinophyma is a slow-growing benign tumor which occurs due to hypertrophy of the sebaceous glands° of the tip of the nose.
 - Seen in long standing cases of acne rosacea.
 - Mostly affects men past middle age.
 - Presents as a pink, lobulated mass over the nose.
- Treatment**
- Paring down the bulk of the tumor with a sharp knife, or carbon dioxide laser or scalpel (dermabrasions), and the area is allowed to re-epithelize.
 - Sometimes tumor is completely excised and the raw area is covered with skin graft.

1060. Potato tumor is

- a) Rhinosporidiosis
- b) Hypertrophied sebaceous gland
- c) Nosopharyngeal angiofibroma
- d) Tubercular infection

Correct Answer - B

Ans. is 'b' i.e., Hypertrophied sebaceous gland

Rhinophyma (Potato tumor)

- Rhinophyma is a benign tumor of tip of nose due to **hypertrophy of sebaceous gland**.
- It is caused by granulomatous infiltration and occurs as a complication of long standing acne rosacea.
- Alcoholism is mistakenly attributed as a cause of this disease, but heavy alcohol consumption does aggravate the condition.
- The usual presentation is due to cosmetic appearance or obstruction.
- Treatment of choice is debulking of tumor by carbon dioxide laser.

1061. Saddle nose is ?

a) Depressed nose

b) Crooked nose

c) Deviated nose

d) C-shaped

Correct Answer - A

Ans. is 'a' i.e., Depressed nose

Saddle nose (Depressed nose)

- Nasal dorsum is depressed (sagging of the bridge of nose).
- Depressed nasal dorsum may involve either bony, cartilaginous or both bony and cartilaginous components. Most common etiology : Nasal trauma
- Causes are *hematoma*, excessive surgical removal, trauma, *syphilis*, abscess, *Leprosy*, and tuberculosis.

Crooked or deviated nose

- *Crooked nose* is the external deviation of nose due to deviation of the dorsal border of septal cartilage, forming a 'C' or 'S' shaped curve.
- In *crooked nose*, the midline dorsum is curved in 'C' or 'S' shaped manner from the frontonasal angle to the tip of nose.
- In a deviated nose, the midline is straight but deviated to one side, midline is not curved as in crooked nose.

1062. Tonsillar fossa is bounded anteriorly by ?

a) Pharyngobasilar fascia

b) Palatopharyngeal fold

c) Buccopharyngeal fascia

d) Palatoglossal fold

Correct Answer - D

Ans. is 'd' i.e., Palatoglossal fold

- Palatine tonsils are masses of lymphoid tissue that can be seen on the left and right sides at the back of the throat.
- There are two palatine tonsils, and each palatine tonsil (right or left) lies in the tonsillar sinus (tonsillar fossa) on the lateral wall of oropharynx.
- Tonsillar fossa bounded by the **palatoglossal fold in front** and the palatopharyngeal fold behind.
- Tonsils are lined by non - keratinized stratified squamous epithelium.
- Medial surface of each tonsil has 15-20 crypts, the largest of which is called Intratonsillar cleft or crypta magna (which represents persistence of the ventral portion of the second pharyngeal pouch).
- Tonsillar bed is formed from within - outwards by :-
- Li Pharyngobasilar fascia
- Superior constrictor (above) and palatopharyngeus muscle
- Styloglossus (below)
- Buccopharyngeal fascia

1063. Posterior epistaxis occurs from:

a) Woodruffs plexus

b) Kiesselbach's plexus

c) Atherosclerosis

d) Littles area

Correct Answer - A

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1064. Predisposing factor for Nasal myiasis ?

- a) Allergic rhinitis
- b) Vasomotor rhinitis
- c) Atrophic rhinitis
- d) Rhinitis medicamentosa

Correct Answer - C

Ans. is 'c' i.e., Atrophic rhinitis

Nasal myiasis (Maggots in nose)

- It results from the presence of ova of flies particularly chrysomia species in the nose which produce ulceration and destruction of nasal structure. Mostly seen in atrophic rhinitis when the mucosa becomes insensitive to flies laying eggs inside.
- Clinical features
- Initial symptoms (3-4 days maggots) :- Intense irritation, sneezing, headache, blood stained discharge, lacrimation. o Later :- Maggots may crawl out of nose and there is foul smell.
- Complications
- Destruction of nose, sinuses, soft tissues of face, palate and eyeball.
- Fistulae in nose and palate.
- Death occurs due to meningitis.
- Treatment
- Chloroform water or vapor must be instilled in order to anaesthetize or kill the maggots and so release their grip from the skin.

1065. Mulberry nasal mucosa is seen in ?

- a) Lupus vulgaris
- b) Vasomotor rhinitis
- c) Atrophic rhinitis
- d) None

Correct Answer - B

Ans. is 'b' i.e., Vasomotor rhinitis

- Vasomotor is a *nonallergic condition* that involves a constant runny nose, sneezing and nasal congestion, i.e., *the nose is stuffy or runny for reasons other than allergies and infections*. The exact etiology is unknown, but triggers include emotions, odors, poor air quality, spicy foods, and medication side effects. *Pathogenesis* include : -
- Parasympathetic overactivity
- Hyperactive nasal mucosa to several non-specific stimuli especially in women of 20-40 years.
- *Symptoms* of vasomotor rhinitis include excessive clear rhinorrhoea, nasal obstruction/congestion, irritation, paroxysmal sneezing and post-nasal drip. Nasal mucosa is hypertrophied & congested; and mucosa of turbinates may give *mulberry like appearance* and is pale to dusky red in colour.
- *Complications* of vasomotor rhinitis include hypertrophic rhinitis & sinusitis, and nasal polyp.
- *Mulberry nasal mucosa is also seen in chronic hypertrophic rhinitis*

1066. Queckensted test is done for ?

- a) Glomus tumor
- b) CSF rhinorrhea
- c) Otosclerosis
- d) Acoustic neuroma

Correct Answer - B

Ans. is 'b' i.e., CSF rhinorrhea

Detection of CSF Leak

1. Biochemical tests

- Concentrations of Glucose are higher in CSF than in nasal discharge. Glucose value $> 30-40$ mg% and protein value < 100 mg % (max 200 mg %) support a diagnosis of CSF leak.
- Presence of I₃transferrin is the most definitive test for detection of CSF and I₃₂transferrin assay is the test of choice when a confirmatory test is needed, because of high sensitivity as well as specificity.
- I₃-trace protein (prostaglandin D synthase) is also used, however it is nonspecific as it is also present in human testes, heart and seroma.

2. Basic clinical tests

- Tissue test (Handker chief test) : - Unlike nasal mucous, CSF does not cause a tissue to stiffen.
- Filter paper test : - Sample of nasal discharge on a filter paper exhibits a light CSF border and a dark central area of blood, i.e., double ring sign or halo sign.
- Queckensted test : - Compression of the jugular vein leads to increased CSF leak due to increase in ICP.
- Rhinoscopy : - Visualization of CSF leak from paranasal sinus.

3. CSF tracers
 - Intrathecal fluorescein dye administration, radionuclide cisternography, CT cisternography.

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1067. Paranasal sinuses present at birth ?

- a) Frontal and maxillary
- b) Ethmoid and maxillary
- c) Frontal and ethmoid
- d) Sphenoid and ethmoid

Correct Answer - B

Ans. is 'b' i.e., Ethmoid and maxillary

Maxillary sinus → Develop at birth; completely develop at 9 years

Ethmoidal sinus → Develop at birth; completely develop at late puberty

Frontal sinus → Develop at 2 year; completely develop at late adolescence

Sphenoid sinus → Develop at 3-5 years; completely develop at 12-15 years

1068. Endoscopic sinus surgery prerequisite?

- a) MRI of paranasal sinus
- b) CT of PNS
- c) Mucocilliary clearing testing
- d) Acoustic tests

Correct Answer - B

Ans. is 'b' i.e., CT of PNS

- Endoscopic surgery of inflammatory diseases of **paranasal sinuses** (sinusitis or polyp) requires a very detailed preoperative knowledge of the individual anatomical conditions and pathological changes.
- CT scan are used best to visualize sinus areas.
- **CT scan provides excellent definition of paranasal sinuses and is a prerequisite for endoscopic surgery.**
- "CT scan limited study coronal cuts in bone window is prerequisite for endoscopic sinus surgery"----Mohan Bansal

1069. Most common sinus to be involved in acute sinusitis?

a) Ethmoid

b) Maxillary

c) Sphenoid

d) Frontal

Correct Answer - B

Ans. is 'b' i.e., Maxillary

Most common sinus affected by sinusitis overall

Maxillary

Most common sinus affected in adult

Maxillary

Most common sinus affected in children

Ethmoid

Least common sinus affected

Sphenoid

Sinuses involved in order of frequency

Maxillary > Frontal > Ethmoid > Sphenoid

1070. All are major symptoms of sinusitis except ?

a) Nasal bluckage

b) Facial congertion

c) Nasal congestion

d) Halitosis

Correct Answer - D

Ans. is 'd' i.e., Halitosis

- The clinical symptoms of acute sinusitis have been classified into major and minor

Major	Minor
Facial pain or pressure	Headache
Purulent nasal discharge	Cough
Fever	Fatigue
Nasal congestion	Halitosis
Nasal obstruction	Dental pain
Hyposmia or Anosmia	Ear pain or pressure
Facial congestion or fullness	

1071. Paranasal polyp CT view?

a) Coronal

b) Axial

c) Sagittal

d) 3D

Correct Answer - A

Ans. is 'a' i.e., Coronal

- Both coronal and axial view are used, but coronal views are best to study paranasal sinus polyps.

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1072. Investigation of choice for nasopharyngeal angiofibroma?

a) X-ray

b) MRI

c) Plane-CT

d) CT- contrast

Correct Answer - D

Ans. is'd'i.e., CT contrast

Ref: Dhingra Sth/e p. 262

- CT scan of head with contrast enhancement is the investigation of choice for JNA.

1073. Transverse fracture of maxilla is ?

a) Le Fort-1

b) Le Fort-2

c) Le Fort-3

d) Craniofacial disruction

Correct Answer - A

Ans. is 'a' i.e., Le Fort-1

- It is classified into 3 types : ?
 1. Le Fort I (transverse) fracture runs above and parallel to the plate. It crosses lower part of nasal septum, maxillary antra and the pterygoid plates.
 2. Le Fort II (pyramidal) fracture passes through the root of nose, lacrimal bone, floor of orbit, upper part of maxillary sinus and pterygoid plates. This fracture has some features common with the zygomatic fractures.
 3. Le Fort III (craniofacial dysfunction). There is complete separation of facial bones from the cranial bones. The fracture line passes through root of nose, ethmoidal junction, superior orbital fissure, lateral wall of orbit, frontozygomatic and temporozygomatic sutures and the upper part of pterygoid plates.

1074. Ethmoidal polyp is ?

a) Due to infection

b) Single

c) Recurrent

d) Occurs in children

Correct Answer - C
Ans. is 'c' i.e., Recurrent

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1075. Tear drop sign is seen in ?

a) Fracture zygomatic arch

b) Fracture maxilla

c) Fracture mandible

d) Blow out fracture

Correct Answer - D

Ans. is 'd' i.e., Blow out fracture

Fractures of the floor of the orbit

- Zygomatic fracture and Le fort II maxillary fractures are always accompanied by fractures of orbital floor.
- Isolated fractures of orbital floor, when a large blunt object strikes the globe, are called "blow out fractures".

Clinical features

- Ecchymosis of lid, conjunctiva and sclera.
- Endophthalmos with inferior displacement of the eye-ball. This becomes apparent when oedema subsides.
- Diplopia, which may be due to displacement of the eyeball or entrapment of inferior rectus and inferior oblique muscles.
- Hypoaesthesia or anaesthesia of cheek and upper lip, if infraorbital nerve is involved.

Diagnosis

- J Water's view show a convex opacity bulging into the antrum from above, i.e., **Tear drop opacity**.
- CT scan is diagnostic.

1076. Most common cause of acute tonsillitis ?

a) Streptococcus pneumoniae

b) H. Influenza

c) 13- hemolytic streptococci

d) Staphylococcus aureus

Correct Answer - C

Ans. is 'c' i.e., 13- hemolytic streptococci

- Tonsils frequently serve as the site of acute infection, which causes acute tonsillitis.
- Tonsillitis is particularly common in children, especially in school going age group. However, it can occur in adult also.
- Virus initiates an acute tonsillitis attack and predisposes to bacterial infection.
- 8-hemolytic streptococcus is the most common organism causing acute tonsillitis.
- Other bacteria causing acute tonsillitis are staphylococcus, hemophilus and pneumococcus.

1077. Peritonsillar abscess is caused most commonly by ?

- a) Streptococcus pneumoniae
- b) Staphylococcus aureus
- c) Beta hemolytic streptococcus
- d) H. influenzae

Correct Answer - C

Ans. is 'c' i.e., Beta hemolytic streptococcus

Peritonsillar abscess (Quinsy)

- Quinsy consists of suppuration outside the capsule in the area around the capsule. There is collection of pus between the capsule of tonsil and the superior constrictor muscle, i.e. in the peritonsillar area.
- Peritonsillar abscess is a complication of tonsillitis and is most commonly **caused by group A beta - hemolytic streptococcus**.
- Clinical features of Quinsy
- Clinical features are divided into :?
 - 1. General : They are due to septicaemia and resemble any acute infection.
 - .. They include fever (up to 104°F), chills and rigors, general malaise, body aches, headache, nausea and constipation.
 - 2. Local :
 - 3. Severe pain in throat. Usually unilateral.
 - 4. Odynophagia. It is so marked that the patient cannot even swallow his own saliva which dribbles from the angle of his mouth. Patient is usually dehydrated.
 - 5. Muffled and thick speech, often called "Hot potato voice".
 - 5. Foul breath due to sepsis in the oral cavity and poor hygiene.

7. Ipsilateral earache. This is referred pain via CN IX which supplies both the tonsil and the ear.
8. Trismus due to spasm of pterygoid muscles which are in close proximity to the superior constrictor.

Examination findings

1. The tonsil, pillars and soft palate on the involved side are congested and swollen. Tonsil itself may not appear enlarged as it gets buried in the oedematous pillars.
2. Uvula is swollen and oedematous and pushed to the opposite side.
3. Bulging of the soft palate and anterior pillar above the tonsil.
4. Mucopus may be seen covering the tonsillar region.
5. Cervical lymphadenopathy is commonly seen. This involves jugulodigastric lymph nodes.
6. Torticollis : Patient keeps the neck tilted to the side of abscess.

Treatment of peritonsillar abscess

- IV fluids
- Antibiotics : High dose penicillin. (iv benzipenicillin) is the DOC. In patients allergic to penicillin erythromycin is the DOC.
- Incision and drainage per orally, if the abscess does not resolve despite high dose of iv antibiotics
- Tonsillectomy is done 6 weeks following an attack of quinsy (interval tonsillectomy).

1078. Killian dehiscence is in ?

a) Superior constrictor

b) Inferior constrictor

c) Middle constrictor

d) None

Correct Answer - B

Ans. is 'b' i.e., Inferior constrictor

Inferior constrictor muscle has two parts :- (i) Thyropharyngeous with oblique fibres, and (ii) Cricopharyngeous with transverse fibres.

Between these two parts of inferior constrictor exists a potential gap called Killan's dehiscence. It is also called the gateway to tear as perforation can occur at this site during esophagoscopy. It is also the site for herniation of pharyngeal mucosa in case of pharyngeal pouch.

1079. Passavants ridge is formed by ?

- a) Palatoglossus
- b) Superior constrictor
- c) Salpingopharyngeus
- d) Palatopharyngeus

Correct Answer - D

Ans. is 'd' i.e., Palatopharyngeus

Pharynx has two group of muscles :?

* Intrinsic muscles :- Stylopharyngeous, salpingopharyngeous, palatopharyngeous.

* Extrinsic muscles :- Superior constrictor, middle constrictor, inferior constrictor.

- All muscles of pharynx are supplied by cranial accessory through branches of vagus via pharyngeal plexus except stylopharyngeus which is supplied by glossopharyngeal.

- Inferior constrictor muscle has two parts :- (i) Thyropharyngeous with oblique fibres, and (ii) Cricopharyngeous with transverse fibres.

- Between these two parts of inferior constrictor exists a potential gap called Killan's dehiscence. It is also called the gateway to tear as perforation can occur at this site during esophagoscopy. It is also the site for herniation of pharyngeal mucosa in case of pharyngeal pouch.

- **Upper fibers of palatopharyngeus constitute the Passavant's muscle** which on contraction raises a ridge called Passavant's ridge on posterior wall of nasopharynx.

1080. Lymphatic drainage of oropharynx is mainly through?

- a) Superficial cervical lymph nodes
- b) Submandibular nodes
- c) Jugulodigastric node
- d) Jugulo-omohyoid nodes

Correct Answer - C

Ans. is 'c' i.e., Jugulodigastric nodes

- Deep cervical lymph nodes are divided into two groups :- (i) jugulodigastric, and (ii) jugulo-omohyoid.
- Lymphatics from oropharynx drain into jugulodigastric nodes.
- **Lymphatic drainage of pharynx**
- Lymphatic drainage of pharynx may be :?
 1. Nasopharynx
 - Nasopharynx drains into upper deep cervical nodes either directly or indirectly through retropharyngeal or parapharyngeal nodes.
 - Nasopharynx also drains into spinal accessory chain of nodes in the posterior triangle of the neck.
 2. Oropharynx
 - Lymphatics from the oropharynx drain into upper jugular particularly the jugulodigastric (tonsillar) nodes.
 - The soft palate, lateral and posterior pharyngeal walls and the base of tongue also drain into retropharyngeal and parapharyngeal nodes and from there to the jugulodigastric and posterior cervical group.
 3. Hyphopharynx
 - Pyriform sinus drains into upper jugular chain & then to deep cervical group of lymph nodes.
 - Postcricoid region drains into parapharyngeal and paratracheal

- group of lymph nodes.
- Posterior pharyngeal wall drains into parapharyngeal lymph nodes and finally to deep cervical lymph nodes.

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1081. Acute retropharyngeal abscess, not true ?

- a) Due to lymphadenitis
- b) Common in adults
- c) Swelling on one side of midline
- d) Incision & drainage

Correct Answer - B

Ans. is 'b' i.e., Common in adults

Retropharyngeal abscess

- Retropharyngeal space lies behind the pharynx, i.e. between buccopharyngeal fascia covering pharyngeal constrictor muscles (anteriorly) and prevertebral fascia covering the prevertebral muscles (posteriorly).
- So, retropharyngeal space lies behind the pharyngeal constrictor muscles and anterior to prevertebral fascia covering the prevertebral muscles.
- Abscess in this space may present differently depending upon the age :?
- Abscess in infants (acute Retropharyngeal abscess)
- It is **commonly seen in infants and children below 3 years of age**. Most commonly it results from **retropharyngeal lymphadenitis** due to an upper respiratory tract infection. The presentation is acute, i.e. child has high temperature and sore throat. There is smooth **swelling** (bulge) in posterior pharyngeal wall on **one side of the midline**. There is dysphagia, difficulty in breathing, stridor, croupy cough and torticollis. Swelling can be palpable per orally on the posterior pharyngeal wall. Treatment is incision and drainage.

- Abscess in adults (chronic retropharyngeal abscess)
- If an adult or an older child has a retropharyngeal infection it is likely to be due to a tuberculous infection of the cervical spine (caries of cervical spine). Sometime it may be secondary to tuberculous infection of retropharyngeal lymph nodes. It is of slow onset and gives rise to pharyngeal discomfort, rather than pain. There is fluctuant swelling in posterior pharyngeal wall, centrally in the midline (if it is secondary to caries of cervical spine) or on one side of midline (if it is secondary to tuberculosis of retropharyngeal nodes). Treatment includes **incision and drainage** of abscess along with full course of antitubercular treatment.

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1082. Most common cause of retropharyngeal abscess in adults?

a) TB

b) Tooth extraction

c) Tonsillitis

d) Lymphadenitis

Correct Answer - A

Ans. is 'a' i.e., TB

- Abscess in infants (acute retropharyngeal abscess)
- Most commonly it results from retropharyngeal lymphadenitis due to an upper respiratory tract infection.
- Treatment is incision and drainage.
- Abscess in adults (chronic retropharyngeal abscess)
- If an adult or an older child has a retropharyngeal infection it is likely to be due to a **tuberculous infection** of the cervical spine (caries of cervical spine). Sometime it may be secondary to tuberculous infection of retropharyngeal lymph nodes.
- Treatment includes incision and drainage of abscess along with full course of antitubercular treatment.

1083. Treatment of choice for nasopharyngeal carcinoma is ?

a) Surgery

b) Radiotherapy

c) Surgery & radiotherapy

d) Chemotherapy

Correct Answer - B

Ans. is 'b' i.e., Radiotherapy

Treatment of nasopharyngeal carcinoma

- Irradiation is treatment of choice (external radiotherapy).
- Radical neck dissection is required for persistent nodes when primary has been controlled and in post radiation cervical metastasis.
- Systemic chemotherapy is used as palliation for distant metastases or radiation failure.
- For advanced stages (stage III & IV), the cure rate can be doubled when chemotherapy is combined with radiotherapy.

1084. Inlet of larynx is formed by:

- a) Ventricular fold
- b) Aryepiglottic fold
- c) Glossoepiglottic fold
- d) Vocal cord

Correct Answer - B

The laryngeal inlet (laryngeal aditus, laryngeal aperture) is the opening that connects the pharynx and the larynx. Its borders are formed by: the free curved edge of the epiglottis, anteriorly. the **arytenoid cartilages**, the corniculate cartilages, and the interarytenoid fold, posteriorly.

1085.

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Most common part of larynx involved in TB ?

a) Anterior

b) Posterior

c) Middle

d) Anywhere

Correct Answer - B

Ans. is 'b' i.e., Posterior

- Essential otolaryngology 2nd/e p. 1139]
- Disease affects the posterior third of larynx more commonly than anterior part.
- The parts affected in descending order of frequency are :- i) Interarytenoid fold, ii) Ventricular band, iii) Vocal cords, iv) Epiglottis.

1086. Vallecula sign is seen in ?

a) TB laryngitis

b) Vocal nodule

c) Inverted papilloma

d) Acute epiglottitis

Correct Answer - D

Ans. is 'd' i.e., Acute epiglottitis

- There are two important radiological signs in *acute* epiglottitis :?
 1. Thumb sign
 2. Vallecula sign

1087. Bilateral recurrent laryngeal nerve palsy is seen in all except ?

a) Thyroid carcinoma

b) Lymphadenopathy

c) Thyroid surgery

d) Aortic aneurysm

Correct Answer - D

Ans. is 'd' i.e., Aortic aneurysm

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1088. Laryngitis sicca is associated with ?

a) Rhinosporidium

b) M. leprae

c) Klebsiella azaenae

d) Klebsiella rhinoscleromatosis

Correct Answer - C

Ans. is 'c' i.e., Klebsiella azaenae

Laryngitis sicca (Atrophic laryngitis or laryngitis atrophica)

- It is a rare entity characterized by atrophic changes in the respiratory mucosa with loss of the mucus - producing glands.
- It is usually associated with atrophic rhinitis and pharyngitis caused by klebsiella ozaenae.
- The most common sites involved in larynx are the false cords (vestibular folds), the posterior region and the subglottic region.
- More common in women.

Clinical features

- Irritable cough and hoarseness
- Excessive crusts formation which are sometimes bloodstained (hemorrhagic) with foul odour. Crusts are the most important diagnostic feature.

Treatment

- Elimination of causative factors and humidification.
- Laryngeal sprays with glucose in glycerine or oil of pine helps in crust removal. Expectorants containing ammonium chloride or iodides also help to loosen the crust.
- Microlaryngoscopic removal of crust in laryngitis sicca is the new modality of treatment.

1089. Hot potato voice is characteristic of ?

a) Nasopharyngeal carcinoma

b) Glottic carcinoma

c) Subglottic carcinoma

d) Supraglottic carcinoma

Correct Answer - D

Ans. is 'd' i.e., Supraglottic carcinoma

Clinical features of supraglottic carcinoma

- Pain on swallowing is the most frequent initial symptom -- Devita 7th/e p. 698
- Mass in neck may be the first sign.
- Hoarseness is a late symptom.
- Pain may be referred to ear by vagus nerve and auricular nerve of Arnold.
- Late symptoms include foul breath, dysphagia and aspiration.
- **Large tumors can cause "hot potato voice/muffled voice".**
- Hemoptysis, sore throat, shortness of breath, stridor, otalgia and aspiration pneumonia may also occur.

1090. Regarding ranula all are true except:

a) Retention cyst

b) Arises from submandibular gland

c) Translucent

d) Plunging may be a feature

Correct Answer - B

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1091. Most common cause of oroantral fistula ?

a) TB

b) Penetrating injury

c) Tooth extraction

d) Iatrogenic

Correct Answer - C

Ans. is 'c' i.e., Tooth extraction

Oroantral fistula

- It is communication between the antrum and oral cavity.

Etiology

- Dental extraction :- Most important cause and maxillary first molar accounts for 50% of oral-antral fistulas caused by extractions. Maxillary second and third molar extractions account for other 50%.
- Infection :- TB, syphilis, leprosy of maxillary bone.
- Malignant neoplasm :- Causes erosion of antrum.
- Fracture or penetrating injuries of maxilla.
- Midline granuloma (a form of lymphoma)
- Failure of sublabial incision to heal after Caldwell - Luc operation.
- Clinical features
- Regurgitation of food
- Discharge (often foul smelling)
- Inability to built positive or negative pressure in mouth.

1092. Schatzki's Ring is present at ?

a) Upper end of trachea

b) Lower end of trachea

c) Upper end of esophagus

d) Lower end of esophagus

Correct Answer - D

Ans. is 'd' i.e., Lower end of esophagus

Schatzki's ring

- It occurs at the junction of squamous and columnar epithelium at the lower end of oesophagus and has also been called **lower oesophageal ring**.
- Usually seen in patients above 50 years of age.
- Cause is unknown.
- Symptomatic patients complain of intermittent dysphagia and some may even present with bolus obstruction.
- It may be associated with hiatus hernia.
- Treatment is oesophageal dilatation.

1093. Proof puncture is done through ?

- a) Superior meatus
- b) Middle meatus
- c) Inferior meatus
- d) Sphenoethmoidal recess

Correct Answer - C

Ans. is 'c' i.e., Inferior meatus

Proof puncture (Antral puncture)

- This procedure involves puncturing the medial wall of maxillary sinus in the region of **inferior meatus** and irrigating the sinus.
- Indications
 1. Chronic and subacute maxillary sinusitis with dual purpose of :
 - Confirming the diagnosis and
 - Washing out the pus
 2. To collect the specimen of the antral contents for culture and sensitivity, or cytological examination to exclude early malignancy.
- Contraindications
 - Children less than 12 years of age.
 - Acute maxillary sinusitis as it may lead to osteomyelitis
 - Fracture of maxilla as fluid may pass through fracture line.
- Diabetes hearing it. The examiner then says that he is going to repeat the test, but puts a non-vibrating fork on the mastoid while at the same time bringing a vibrating fork close to the auricle. If the patient is malingering, he will hear the tuning fork through air conduction, but think that it is being heard through the bone. If he is really deaf he will not hear the fork.
- 3. Lomard's test
- This depends upon the fact that to the normal man the sound of his

own voice is necessary for the proper regulation of its tone and loudness. The Barany noise apparatus is adjusted to the patient's sound ear and its machinery started in order to accustom him to its grating noise. He is given a book, and told to read aloud in his normal voice and not to stop reading when the instrument is set in action. As soon as the noise begins, a man whose opposite ear is profoundly deaf will at once raise his voice and, if his deafness is absolute, may literally shout. The malingerer, on the other hand, claiming a one-sided deafness which is not real will continue to read in an even tone or in a tone only slightly elevated.

4. Acoustic reflex (stapedial reflex threshold)

- If stapedial reflex is present, it rules out NOHL because stapedial reflex is not in voluntary control.
- 5. Electric response audiometry (ERA) or cortical evoked response audiometry
- It is very useful in NOHL and can establish hearing acuity of the person to within 5-10 dB of actual thresholds.
- 6. Other tests
- Gault test, Erhard's test, delayed speech feedback.

1094. All are absolute indications of tonsillectomy except

- a) Suspicious malignancy
- b) Peritonsillar abscess
- c) Chronic tonsillitis
- d) Tonsils causing obstructive sleep apnea

Correct Answer - C

Ans. is 'c' i.e., Chronic tonsillitis

Tonsillectomy

- Tonsillectomy, as the name suggests, is the surgical procedure to remove the tonsils.
- Often, tonsillectomy is done at the same time as adenoidectomy.
- Indications
- Indications are divided into :?
 - A. Absolute**
 1. Recurrent infections of throat. This is the most common indication. Recurrent infections are further defined as :
 - Seven or more episodes in one year, or
 - Five episodes per year for 2 years, or
 - Three episodes per year for 3 years, or
 - Two weeks or more of lost school or work in one year.
 2. Peritonsillar abscess.
 - In children, tonsillectomy is done 4-6 weeks after abscess has been treated. In adults, second attack of peritonsillar abscess forms the absolute indication.
 - 3. Tonsillitis causing febrile seizures.
 - 4. Hypertrophy of tonsils causing
- Airway obstruction (sleep apnoea)

- Difficulty in deglutition
- Interference with speech.
- 5. Suspicion of malignancy.
- A unilaterally enlarged tonsil may be a lymphoma in children and an epidermoid carcinoma in adults. An excisional biopsy is done.

B. Relative

1. Diphtheria carriers, who do not respond to antibiotics
2. Streptococcal carriers, who may be the source of infection to others.
3. Chronic tonsillitis with bad taste or halitosis which is unresponsive to medical treatment.
4. Recurrent streptococcal tonsillitis in a patient with valvular heart disease.

C. As a part of Another Operation

1. Palatopharyngoplasty which is done for sleep apnoea syndrome.
2. Glossopharyngeal neurectomy. Tonsil is removed first and then IX nerve is severed in the bed of tonsil.
3. Removal of styloid process.

1095. Early tonsillectomy is not done in?

- a) Thyroid storm
- b) Suspected malignancy
- c) Peritonsillar abscess
- d) Rheumatic fever

Correct Answer - A

Ans. is 'a' i.e., Thyroid storm

- Uncotrolled systemic hypertension is a contraindication for tonsillectomy.
 - In thyroid storm there is dangerously high BP.
- Contraindications of tonsillectomy**
1. Haemoglobin level less than 10 g%.
 2. Presence of acute infection in upper respiratory tract, even acute tonsillitis. Bleeding is more in the presence of acute infection.
 3. Children under 3 years of age. They are poor surgical risks.
 4. Overt or submucous cleft palate.
 5. Bleeding disorders, e.g. leukaemia, purpura, aplastic anaemia, haemophilia.
 6. At the time of epidemic of polio.
 7. Uncontrolled systemic disease, e.g. diabetes, cardiac disease, hypertension or asthma.
 8. Tonsillectomy is avoided during the period of menses.

1096. Fenestration operation is which type of tympanoplasty?

a) Type-2

b) Type-3

c) Type-4

d) Type-5

Correct Answer - D

Ans. is 'd' i.e., Type-5

Types of tympanoplasty

- *Wullstein* classified tympanoplasty into five types :?

Type I: → Defect is perforation of tympanic membrane which is repaired with a graft. It is also called myringoplasty.

Type II: → Defect is perforation of tympanic membrane with erosion of malleus. Graft is placed on the incus or remnant of malleus.

Type III: → Malleus and incus are absent. Graft is placed directly on the stapes head. It is also called *myringostapediopexy* or *columella tympanoplasty*.

Type IV: → Only the footplate of stapes is present. It is exposed to the external ear, and graft is placed between the oval and round windows. A narrow middle ear (cavum minor) is thus created, to have an air pocket around the round window. A mucosa-lined space extends from the eustachian tube to the round window. Sound waves in this case act directly on the footplate while the round window has been shielded.

Type V: → Stapes footplate is fixed but round window is functioning. In such cases, another window is created on horizontal semicircular canal and covered with a graft. Also called **fenestration**

operation.

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1097. In type-4 thyroplasty, vocal cord is ?

a) Medially displaced

b) Laterally displaced

c) Lengthened

d) Shortened

Correct Answer - C

Ans. is 'c' i.e., Lengthened

Thyroplasty

- Isshiki divided thyroplasty procedures into 4 categories to produce functional alteration of vocal cords : -
 1. Type 1 : Medial displacement of vocal cord (done by injection of gel foam/Teflon paste)
 2. Type 2 : Lateral displacement of cord (done to improve the airway).
 3. Type 3 : Shortening (relax) the cord, to lower the pitch (gender transformation from female to male).
 4. Type 4 : Lengthening (tightening) the cord, to elevate the pitch (gender transformation from male to female), for example as a treatment of androphonia.

1098. Objective test in adenoids

a) Posterior rhinoscopy

b) Anterior rhinoscopy

c) Manual palpation

d) All of the above

Correct Answer - A

Ans. is 'a' i.e., Posterior rhinoscopy

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1099. Mucoperichondrial flap in septoplasty is made on?

- a) Alar cartilage
- b) Septal cartilage
- c) Maxillary spine
- d) Sphenoid spine

Correct Answer - B

Ans. is 'b' i.e., Septal cartilage

Steps in septoplasty

- A unilateral incision is made in the mucoperichondrial flap at the lower border of septal cartilage on the left side in right handed persons.
- The mucoperichondrial flap is elevated on one side making an anterior tunnel.
- Another incision is made in the mucoperiosteum over the nasal spine on the same side, elevating the mucoperiosteum from nasal spine on both sides thus making two more tunnels called inferior tunnels. Two tunnels are joined by sharp dissection.
- Septal cartilage is then separated from vomero-ethmoid bones posteriorly and nasal spine inferiorly.
- Maxillary crest is removed to realign septal cartilage.
- Bony septal deformity is corrected by removing deformed part. Deformed septal cartilage is corrected.
- Trans-septal sutures are put to coapt mucoperichondrial flaps.
- Nasal pack is put.
- Thus (coming to question)
- Mucoperichondrial flap (and tunnel) are made on septal cartilage.
- Mucoperiosteal flap (and tunnels) are made on nasal spine.

1100. Killions incision is used for?

a) Septoplasty

b) SMR

c) Proof puncture

d) Modified radical mastoidectomy

Correct Answer - A

Ans. is 'a' i.e., Septoplasty

Technique of septoplasty

1. Infiltrate the septum with 1% lignocaine with adrenaline 1:100,000.
2. In cases of deviated septum, make a slightly curvilinear incision, 2-3 mm above the caudal end of septal cartilage on the concave side (Killian's incision). In case of caudal dislocation, a transfixion or hemitrans fixation (Freer's) incision is made.
3. Raise mucoperichondrial/mucoperiosteal flap on one side only.
4. Separate septal cartilage from the vomer and ethmoid plate and raise mucoperiosteal flap on the opposite side of septum.
5. Remove maxillary crest to realign the septal cartilage.
6. Correct the bony septum by removing the deformed parts. Deformed septal cartilage is corrected by various methods, such as :
 - Scoring on the concave side
 - Cross-hatching or morselizing
 - Shaving
 - Wedge excision
7. Further manipulations like realignment of nasal spine, separation of septal cartilage from upper lateral cartilages, implantation of cartilage strip in the columella or the dorsum of nose may be required.
7. Trans septal sutures are put to accept mucoperichondrial flaps

7. Trans-septal sutures are put to coapt mucoperichondrial flaps.
8. Nasal pack.

1101. All are early complications of tracheostomy except?

a) Hemorrhage

b) Pneumothorax

c) Injury to esophagus

d) Tracheal stenosis

Correct Answer - D

Ans. is 'd' i.e., Tracheal stenosis

Complications of Late (with prolonged tracheostomy use of tube for weeks or months)

<u>Immediate (at the time of operation)</u>	<u>Intermediate (first few hours or days)</u>	<u>Late (with prolonged tracheostomy use of tube for weeks or months)</u>
• Hemorrhage • Apnea • Pneumothorax • Injury to RLN • Aspiration of blood • Injury to esophagus	• Bleeding (reactionary or secondary) • Displacement of tube • Blocking of tube • Subcutaneous emphysema • Tracheitis and tracheobronchitis • Atelectasis and lung abscess • Local wound infection and granulations	• Hemorrhage, due to erosion of major vessel • Laryngeal stenosis • Tracheal stenosis • Tracheo-esophageal fistula • Problem of decannulation • Persistent tracheocutaneous fistula • Problem of tracheostomy scar

1102. Rosen's incision is used for ?

a) Septoplasty

b) SMR

c) Stapedectomy

d) Tonsillectomy

Correct Answer - C

Ans. is 'c' i.e., Stapedectomy

- Rosen's incision is the most commonly used for **stapedectomy** through endomeatal or transcanal approach. Also know
- Lempert's incision is used for endural approach.
- Wilde's incision is used for postaural approach.

1103. Trismus is seen in commonly ?

- a) Ludwig angina
- b) Quinsy
- c) Retropharyngeal abscess
- d) Parapharyngeal abscess

Correct Answer - B

Ans. is 'b' i.e., Quinsy

- Trismus is inability to open-mouth.
- Normal opening of mouth ranges between 25-50mm.
- Any value less than this is known as trismus (roughly the opening should permit a minimum of three fingers when inserted sideways).
- Causes of quinsy are :?
 - A. Common causes**
 - Infection around impacted third molar
 - Quinsy (peritonsillar abscess)
 - Submucous fibrosis
 - TM joint dysfunction
 - B. Less common causes**
 - Ludwings angina
 - Parotid gland infection and tumors
 - Malignant otitis externa or furuncle in external auditory canal.
 - Parapharyngeal and retropharyngeal abscess
 - Carcinoma mandible
 - Tetanus
 - Radiation therapy
 - Carcinoma cheek
 - Malignant hyperthermia
 - Coming to the question

- Trismus can occur in all the given options.
- However, it is most common and most characteristic of quinsy (among the given options).

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1104. All are seen in treacher collin syndrome except

a) Conductive deafness

b) Cleft palate

c) Mandibular hypoplasia

d) Choanal atresia

Correct Answer - D

Ans. is 'd' i.e., Choanal atresia

Treacher collins syndrome

- It is rare condition that presents several craniofacial deformities of different levels.
- This is a congenital malformation involving the first and second branchial arches.
- The disorder is characterized by abnormalities of the auricular pinna, hypoplasia of facial bones, antimongoloid slanting palpebral fissures with coloboma of the lower eyelids and cleft palate.
- Important clinical findings are :-
 1. Antimongoloid palpebral fissures
 2. Malformed malleus and incus (normal stapes)
 3. Coloboma of lower lid
- 4. **Conductive deafness**
- 5. **Hypoplasia of mandible** (micrognathia) and molar bones
- 6. **Cleft palate**
- 7. **Malformed pinna and meatal atresia**
- It is the most common benign neoplasm of nasopharynx.
- It is a highly vascular tumor and blood supply of the tumor most commonly arises from the internal maxillary artery.
- Juvenile nasopharyngeal angiofibroma (JNA) occurs almost

exclusively in males.

- Female with Juvenile nasopharyngeal angiofibroma (JNA) should undergo genetic testing.
- Onset is most commonly in the second decades, the range is 7-19 years.
- The exact cause is unknown. As the tumour is predominantly seen in adolescent males in the second decade of life, it is thought to be testosterone dependent.
- The most common site is posterior part of nasal cavity close to the margin of sphenopalatine foramen.
- The tumor starts adjacent to the sphenopalatine foramen.
- Large tumors are frequently bilobed or dumbbell shaped, with one portion of tumor filling the nasopharynx and the other portion extending to the pterygopalatine fossa.

Clinical features

- Symptoms depend on spread of tumour to nasal cavity, paranasal sinuses, pterygomaxillary fossa, infratemporal fossa, cheek, orbits (through inferior orbital fissure), cranial cavity (most common site is middle cranial fossa).
- Nasal obstruction (80-90%) is the most common symptom, especially in the initial stages. This results in denasal speech, hyposmia, broadening of nasal bridge.
- Spontaneous profuse & recurrent epistaxis is the second most common symptom
- Otalgia, conductive hearing loss, serous otitis media, due to eustachian tube obstruction.
- Pink or purplish mass obstructing one or both choanae in nasopharynx.
- Tumour in the orbit causes : proptosis; and *frog-face deformity*; diplopia and diminished vision.
- Tumour in infratemporal fossa can cause trismus and bulge of parotid.
- II, III, IV, V, VI cranial nerve can be involved.
- Splaying of nasal bones.
- Swelling of cheek and fullness of face.

Diagnosis and treatment

- Contrast CT is the investigation of choice.

- Biopsy should be avoided as it can cause severe bleeding.
- Surgical excision is the treatment of choice.

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1105. True about penderd's syndrome ?

- a) Blindness
- b) Conductive deafness
- c) Sensorineural deafness
- d) All of the above

Correct Answer - C

Ans. is 'c' i.e., Sensorineural deafness

Important features of Pendered syndrome:

- Congenital disorder
- Mutation in gene SLC 26 A4. Which codes for a protein called pendrin (helps in transport of ions across membrane).
- Impaired activity of Pendrin is seen in inner ear and thyroid gland.
- **Bilateral sensorineural hearing loss.**
- Goiter.
- Sometimes hypothyroidism.
- Occasionally vestibular dysfunction.
- No specific treatment.

1106. Best view for nasal bone ?

a) Lateral

b) Towne's

c) Cald-well

d) Submentovertical

Correct Answer - A
Ans. is 'a' i.e., Lateral

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1107. Which of the following is a pneumatic bone ?

a) Parietal bone

b) Occipital bone

c) Mastoid process

d) None

Correct Answer - C

Ans. is 'c' i.e., Mastoid process

- Pneumatic bones are one which contain large air spaces lined by epithelium. Examples: maxilla, sphenoid, ethmoid, etc. They make the skull light in weight, help in resonance of voice, and act as air conditioning chambers for the inspired air.
- A bone that is hollow or contains many air cells called as pneumatic bone.
- Examples are mastoid process of temporal bone, maxilla, ethmoid, sphenoid and frontal bone. Very simple to remember last 4 as all four paranasal sinuses are pneumatic bones.

1108. Which structure prevents spread of infection from middle ear to brain ?

a) Tegmen tympani

b) Cribriform plate

c) Fundus tympani

d) Petrous apex

Correct Answer - A

Ans. is 'a' i.e., Tegmen tympani

- Tegmen tympani (forming the roof of middle ear cavity) separates the tympanic cavity from middle cranial fossa.

1109. True regarding laryngeal TB is?

- a) Commonly involves anterior 2/3 rd of vocal cord
- b) Mouse-nibbled vocal cord
- c) More common in males
- d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Mouse-nibbled vocal cord

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1110. A child has got a congenital cataract involving the visual axis which was detected by the parents right at birth. This child should be operated:

- a) Immediately
- b) At 2 months of age
- c) At 1 year of age when the globe becomes normal sized
- d) After 4 years when entire ocular and orbital growth becomes normal

Correct Answer - A

Ans. A [Immediately]

Congenital cataract - Timing of surgery

1. **Bilateral dense** - cataract requires early surgery (i.e. **by 6 weeks of age**) to prevent the development of stimulus deprivation amblyopia
2. **Bilateral partial**- cataract may not require surgery until later if at all, in cases of doubt, it may be prudent to defer surgery monitor lens opacity, and visual function and intervene later if vision deteriorates.
3. **Unilateral dense** - cataract merits urgent surgery (**within days**) followed by aggressive anti-amblyopia therapy the cataract is detected after 16 weeks of age then surgery can be delayed little because amblyopia is refractory
4. **Partial unilateral** - cataract can usually be observed or treated non surgically with pupillary dilatation and possibly part-time contralateral occlusion to prevent amblyopia "The critical period of developing the fixation reflexes in both unilateral and bilateral visual deprivation disorders is between 2 and 4 months of age, any cataract dense enough to impair vision must be dealt with before this

age and the earliest possible time is preferred"

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1111. In head injury unilateral dilatation of pupil is seen due to ?

a) Oculomotor nerve compression

b) Ophthalmic N. compression

c) Trigeminal N. compression

d) None

Correct Answer - A

Ans. A. Oculomotor nerve compression

Pupil dilation is thought to be the result of uncal herniation causing mechanical compression of IIIrd cranial nerve and subsequent brain stem compromise,

1112. Proptosis is not seen in

- a) Grave's disease
- b) Sarcoidosis
- c) Pituitary adenoma
- d) Myxoedema

Correct Answer - D

Ans. is 'd' i.e., Myxoedema

Proptosis occurs in thyrotoxicosis not in hypothyroidism

Choices

Logic

Grave's

Cytokines appear to play a major role in thyroid-associated ophthalmopathy. There is infiltration of the extraocular muscles by activated T cells; the release of cytokines such as IFN-alpha and TNF results in fibroblast activation and increased synthesis of glycosaminoglycans that trap water, thereby leading to characteristic muscle swelling.

Sarcoidosis	Approximately 20%, of patients with ophthalmic findings of sarcoid have soft tissue involvement of the orbit or lacrimal gland and present as a mass lesion with proptosis, ptosis, or ophthalmoplegia.
Pituitary adenoma	Macro-adenoma associated with pituitary apoplexy can lead to proptosis.

1113. Eye of a newborn is ?

a) Emmetropic

b) Hypermetropic

c) Myopic

d) Astigmatism

Correct Answer - B

Ans. is 'b' i.e., Hypermetropic

Eye at birth

- Anteroposterior diameter of eye ball is about 16.5 mm (70% of adult size). Adult size is attained by 7-8 years.
- Corneal diameter is about 10 mm. Adult size (11.7 mm) is attained by 2 years of age.
- Anterior chamber is shallow and angle is narrow.
- Lens is spherical at birth.
- Retina : - Apart from macular area, the retina is fully differentiated. Macula differentiates 4-6 months after birth.
- Myelination of optic nerve fibres has reached the lamina cribrosa.
- New born is usually hypermetropic by +2 to +3D.
- Orbit is more divergent (50°) as compared to adult (45°).
- Lacrimal gland is still underdeveloped and tears are not secreted.

1114. Normal level of visual acuity is attained at which age

a) 6 months

b) 1 year

c) 3 years

d) 6 years

Correct Answer - C

Ans. is 'c' i.e., 3 years [Ref Khurana 4th

Eye in postnatal period

- Fixation starts developing by 4-6 weeks. **Critical period for development of fixation reflex is 2-4 months.** Development of fixation is completed by 6 months. So there are three points to remember : ?
- *Fixation starts developing 4-6 weeks (1-11/2 months).*
Critical period for development → 2-4 months.
- .. *Fixation development is completed → 6 months.*
- 2. *Macula is fully developed by 4-6 months.*
- 3. *Fusional reflex, stereopsis and accommodation is well developed by 4-6 months.*
Cornea attains normal adult diameter by 2 years of age.
- *Lens grows throughout life.*
- *Full visual acuity (6/6) is attained by 3 years of age.*

Age	Visual acuity
New born	6 / 240
1 month	6/180 - 6/90
4-6 months	6/18 - 6 /9
3 Years	6 / 6

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1115. All are parts of anterior segment of eye except?

a) Lens

b) Cornea

c) Vitreous

d) None

Correct Answer - C

Ans. is 'c' i.e., Vitreous

The eyeball is divided into two segments : ?

Anterior segment

1. Part of eyeball anterior to posterior border of lens is called anterior segment.
2. It consists of lens, and structures anterior to it, i.e., cornea, iris and two aqueous humor-filled spaces, i.e., anterior and posterior chambers.
3. Anterior chambers : - It is bounded anteriorly by back of cornea and posteriorly by the iris & part of ciliary body. It contains aqueous humor.
4. Posterior chamber : - This triangular chamber is bounded anteriorly by the posterior surface of the iris & ciliary body and posteriorly by the lens and its zonules. It also contains aqueous humor.
5. Thus, both anterior and posterior chambers are part of anterior segment and both contain aqueous humor.

Posterior segment

1. Part of eye ball posterior to lens is called posterior segment.
2. It consists of vitreous humor, retina, choroid and optic disc.

1116. Attachement of Vitreous is Strongest at

- a) Foveal region
- b) Back of lens
- c) Across ora serrata
- d) Margin of optic disc

Correct Answer - C

Ans. is 'c' i.e., Across ora serrata

Attachement of vitreous

- Vitreous is attached anteriorly to the lens (Hyloid capsular ligament of Wieger) and ciliary epithelium in front of the ora serrata.
- The part of vitreous about 4 mm across the ora serrata is known as the "base of vitreous" where the attachment is strongest
- Posteriorly vitreous is attached to the edge of the optic disc and macula lutea (foveal region) forming ring-shaped structure around them

1117. The junction between Retina & Ciliary body is ??

a) Equator

b) Pars plicata

c) Pars plana

d) Ora serrata

Correct Answer - D

Ans.D. Ora serrata

Ora serrata is the serrated peripheral margin where the retina ends' Here retina is firmly attached both to vitreous and choroid.
Pars plana (of ciliary body) extends anteriorly from ora serrata.

1118. Normal aqueous production rate -

a) 2 ml/min

b) 5 ml/min

c) 2 l/min

d) 5 l/min

Correct Answer - C

Ans. is 'c' i.e., 2 l/min

- The ciliary processes are the site of aqueous production. The aqueous humor is primarily derived from the plasma within the capillary network of the ciliary process. Three mechanisms play a part in aqueous formation at different levels :- (i) Active secretion (70%), (ii) ultrafiltration (20%), (iii) Diffusion / osmosis (10%). Active secretion occurs by the help of Na^+ IC AT Pase system and bicarbonate system mediated by carbonic anhydrase (convert CO_2 & H_2O into carbonic acid).
- The normal aqueous production is 2.3 micro lit/min. Total volume of aqueous is about 0.31 ml (0.25ml in anterior chamber and about 0.06 ml in the posterior chamber). As it is derived from plasma it has similar constituents as plasma, but at different concentrations :-
 - i) **Constituents having concentration less than plasma :-** Protein Na^+ , IC^+ , Ca^+ , Mg^+ , Urea, glucose.
 - ii) **Constituents having concentration more than plasma :-** Cl^- , HCO_3^- , Lactate, Pyruvate, Ascorbate.
- Aqueous humor is important in providing following functions :-
 - .. Maintenance of intraocular pressure (IOP):- Normal is between 10 -21 mm Hg (mean 16 ± 2.57 mm Hg).
 - .. it) Nutritional function:- Aqueous plays an important role by providing

substrate and by removing metabolites from avascular cornea and lens.

- 3. Optical function :- Maintains optical transparency
- 4. Clearing function :- Aqueous serves as a mechanism to clear blood, macrophages, remnants of lens matter and products of inflammation from the anterior chamber (takes place of lymph that is absent within the eyeball).

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1119. Which are first order neuron in optic pathway?

a) Bipolar cells

b) Ganglionic cells

c) Cells of lateral geniculate body

d) Astrocytes

Correct Answer - A

Ans. is 'a' i.e., Bipolar cells

In visual pathway

Sensory organs → Photoreceptors (Rods & cones)

Neurons of first order → 3 Axon of bipolar cells (in Retina)

Neurons of second order → Axons of ganglionic cell (Retina i.e., Optic disc, Optic nerve, Optic chiasma, optic tracts)

Neurons of third order → Axons from nerve cells in lateral geniculate body (optic adiation)

1120. Treatment of choice for anisoeikonia ?

a) Orthoptic exercise

b) Spectacles

c) Surgery

d) Contact lens

Correct Answer - D

Ans. is 'd' i.e., Contact lens

Anisoeikonia

- Anisoeikonia is defined as a condition wherein the images projected on the visual cortex from the two retinae are abnormally unequal in size or shape. Causes may be

Optical aniseikonia : - When the difference between refractive error of two eyes is of high degree, the image of an object may be of different size or shape in two eyes. So the defect is at refractive structures level.

Retinal aniseikonia : - Defect is at retinal level and occurs due to displacement of retinal elements towards the nodal point in one eye due to stretching or edema of the retina.

Cortical aniseikonia : - Defect is at higher central level. There is asymmetrical simultaneous perception inspite of equal size of images formed on the two retinae.

Up to 5 percent aniseikonia is well tolerated. For high degree of aniseikonia, treatment of choice is contact lenses.

1121. Shortening of 2 mm of axial length of eye ball causes ?

- a) 3D myopia
- b) 6D myopia
- c) 3D hypermetropia
- d) 6D hypermetropia

Correct Answer - D

Ans. is. d., 6D hypermetropia

- Change in axial length can cause refractive error.
- It is the commonest form of ametropia (both myopia and hypermetropia).
- In *hypermetropia*, there is an axial shortening of eyeball.
- So, image is formed behind the retina.
- In *myopia*, there is an axial lengthening of eyeball.
- So, image is formed in front of the retina.
- 1 mm change in axial length leads to ametropia of 3D.
- For example 1 mm shortening in axial length causes hypermetropia of 3D.

1122. Maximum correction of myopia can be done by ?

a) Radial keratotomy

b) LASIK

c) Photorefractive keratotomy

d) Orthokeratology

Correct Answer - B

Ans. is 'b' i.e., LASIK

- Amongst the given options, maximum correction can be achieved by LASIK.

Surgical ocedure

Myopia orrection

Radial keratotomy

-2 to -6 D

Photorefractive keratotomy

-2 to -6 D

LASIK

Upto -12D

Extraction of lens

-16 to -18 D

Phakic IOL

> -12 D

Interconaeal ring (ICR)

1-6 D

Orthokeratology

upto - 5D

1123. Which of the following is not a cause of hypermetropia:
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- a) Short axial length of the eyeball
- b) Flat cornea
- c) Increased refractive index of the cortex of lens
- d) Anterior dislocation of the lens

Correct Answer - D

Ans. D: Anterior dislocation of the lens

Factors responsible for hypermetropia:

- Short axial length of the eyeball
- Curvature hypermetropia commonly occurs as a factor in astigmatism (corneal plana)
- Index hypermetropia accounts for the hypermetropia of old age due to increased refractive index of the cortex of the lens relative to the nucleus so that overall refractive power of the lens decreases. It may be associated with diabetes, tumors, microphthalmia (a growth dysfunction during fetus development) and fovea hypoplasia, a condition that affects the blood vessels in the retina. While these conditions may result in hypermetropia, one of the most commonly cited causes of farsightedness is considered to be aging.

1124. Standard in perimetry ?

a) Goldman type I

b) Goldman type II

c) Goldman type III

d) Goldman type IV

Correct Answer - C

Ans. is 'c' i.e., Goldman type III

- Projected stimuli in perimetry are usually white and of variable size and intensity.
- There are five different sizes on Goldmann scale designated by Roman numeral I to V.
- *The standard used in both manual and automated perimetry is Goldman III (0.05" and area of 4mm²). o Failure to recognize target size III necessitates testing with stimulus V*

Goldman scale Stimulus size (mm²)

I	1/4
II	1
III	4
IV	16
V	64

1125. Slit lamp examination helps in examination of?

a) Anterior 2/3rd of choroid

b) Anterior 1/3rd of choroid

c) Posterior 1/3rd of choroid

d) Posterior capsule

Correct Answer - D

Ans. is 'd' i.e., Posterior capsule

Slit-lamp biomicroscopy is very useful in the diagnosis of eye diseases.

- o It should routinely be performed in almost all diseases of the eye.
- o Following structures are examined ?
 1. Eyelids and lashes
 2. Conjunctiva
 3. Cornea
 4. Anterior chamber
 5. Iris
 6. Lens : Anterior capsule, cortex, nucleus, posterior capsular
 7. Anterior vitreous

1126. Fundus fluorescein angiography done in a patient following cataract surgery shows a flower petal pattern. What is he MOST likely suffering from?

- a) Macular hole
- b) Cystoid macular edema
- c) Central serous retinopathy
- d) None of the above

Correct Answer - B

He is showing features of cystoid macular edema. Cystoid macular edema refers to a condition in which there is fluid accumulation in honeycomb like spaces of the outer plexiform and inner nuclear layers. **Fluorescein angiography done shows leakage of fluorescein dye from the perifoveal retinal capillaries and peripapillary region, and accumulating in a flower-petal pattern around the fovea.**

It most frequent occur following cataract surgery, especially if the surgery was complicated or prolonged. It usually manifests at 4–12 weeks postoperatively.

Ref: Fletcher E.C., Chong N., Augsburger J.J., Corrêa Z.M. (2011). Chapter 10. Retina. In P. Riordan-Eva, E.T. Cunningham, Jr. (Eds), Vaughan & Asbury's General Ophthalmology, 18e

1127. Diagnosis of all is made by fluorescein angiography except?

- a) Diabetes retinopathy
- b) Hypertensive retinopathy
- c) Central serous retinopathy
- d) Choroidal neovascularization

Correct Answer - B

Ans. is 'b' i.e., Hypertensive retinopathy

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1128. During retinoscopy of a 30 years old male, which cycloplegic is used routinely

- a) Atropine 1% ointment
- b) Cyclopentolate 1% drop
- c) Homatropine 2% drop
- d) None of the above

Correct Answer - D

Ans. is 'd' i.e., None of the above

- There is no need for cycloplegia as a routine in adults (20-40 years).
Cycloplegic in retinoscopy
- Cycloplegics are drugs which cause paralysis of ciliary muscles (accommodation) and dilatation of pupil. The use of cycloplegics is useful in refraction and there are certain situations where they are indicated.
- Because of their strong accommodative reserve, very young people (< 16 years) should always be refracted after
the use of cycloplegics : -
 - .. < 5 years of age : - Atropine 1% ointment is the drug of choice.
 - .. 15 - 20 years : - Homatropine (2% drop), cyclopentolate (1% drop) or tropicamide (5%, 10% drop) are used. Atropine must be used if the patient has a convergent squint or has high hypermetropia.
- There is no need for cycloplegia as a routine in adults (20-40 years). However cycloplegics are indicated in following situations : -
Accommodation is abnormally active (e.g., spasm of accommodation).
- .. Objective findings by retinoscopy do not agree with the patient's

subjective requirement.

2. Symptoms of accommodative asthenopia are present.
3. If the pupil is small.
 - If the patient is above 40 years, cycloplegia is rarely necessary. Only mydriatic (10% phenylephrine) may be needed when the pupil is narrow or media is slightly hazy.

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1129. In specular microscopy endothelial density is measured by?

a) Optical doubling

b) Fixed frame analysis

c) Optical focusing

d) None

Correct Answer - B

Ans. is 'b' i.e., Fixed frame analysis

- Endothelial cell density in specular microscopy is counted by fixed frame analysis and variable frame analysis.

$$\text{Cell density (cells/mm}^2\text{)} = \frac{\text{Cell count in frame}}{\text{Area of frame}}$$

1130. Retinitis pigmentosa is characterized by ?

a) Central scotoma

b) Centrocaecal scotoma

c) Tubular vision

d) Isopteric contraction

Correct Answer - C

Ans. is 'c' i.e., Tubular vision

Important facts

- Earliest visual field defect in primary open angle glaucoma → Isopeteric contraction.
- Earliest clinically significant visual field defect in primary open angle glaucoma → Paracentral scotoma,
- Visual field defect in rheumatogenous retinal detachment → Loss of peripheral field.
- Visual field defect in retinitis pigmentosa → Tubular vision.
- Most common visual field defect in optic neuritis → Central or centrocaecal.
- Visual field defect in papilloedema → Enlargement of blind spot and progressive contraction of visual field.
- Visual field defect in Leber's optic neuropathy → Centmcaecal.
- Characteristic visual field defect in anterior ischemic optic neuropathy → Altitudinal visual field defects.

1131. True about electroretinogram ?

- a) 'a' wave is positive wave
- b) 'a' wave arises from pigmented epithelium
- c) 'b' wave arises from rods and cones
- d) 'c' wave is positive wave

Correct Answer - D

Ans. is 'd' i.e., 'c' wave is positive wave

Electroretinogram

- The changes induced by the stimulation of light in the resting potential of the eye are measured by electroretinography. It is extinguished or absent in complete failure of function of rods and cones, e.g. pigmentary retinal dystrophy, complete occlusion of retinal artery, complete retinal detachment, advanced siderosis etc.
- 1. Negative 'a' wave represent the activity in rods and cones.
- 2. Positive 'b' wave arises in inner retinal layers.
- 3. Positive 'c' wave is associated with the pigmentary epithelium.

Uses :?

- 1. Diagnosis and prognosis of retinal disorders such as retinitis pigmentosa, Leber's congenital amaurosis, retinal ischaemia and other chorioretinal degenerations.
- 2. To assess retinal function when fundus examination is not possible, e.g. in the presence of dense cataract and corneal opacity.
- 3. To assess the retinal function of the babies where possibilities of impaired vision is considered.

1132. Arcuate field defect akin to glaucoma is seen in?

a) Pituitary tumor

b) Occipital lobe infarct

c) Optic nerve lesion

d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Optic nerve lesion

- An arcuate visual field defect usually results from damage to retinal nerve fibers or ganglion cells in the superior or inferior arcuate nerve fiber bundles.
- In such cases there is a central field defect that is not circular but instead is limited above or below by the horizontal meridian.
- This visual field defect may occur in patients with occlusion of blood supply of the superior or inferior portion of macula or in patients with glaucoma.
- In both settings, the scotoma is associated with normal visual acuity, since it does not completely affect the macula.
- Virtually any lesion, whether ischemic, infiltrative or compressive, can cause arcuate field defect, and may be located in either the retina or optic nerve.

Important causes of arcuate scotoma are :-

1. Glaucoma
2. Optic neuritis
3. Anterior ischemic optic neuropathy (AION)
4. Branch retinal vascular occlusion (artery or vein)
5. Optic nerve drusen

1133. Binocular single vision is tested by ?

a) Amsler grid

b) Synoptophore

c) Maddox rod

d) Cardboard test

Correct Answer - B

Ans. is 'b' i.e., Synoptophore

Grades of binocular single vision

- There are three grades of binocular single vision, which are best tested with the help of a synoptophore.

1. Grade-I - Simultaneous perception

- It is the power to see two dissimilar objects simultaneously.
- It is tested by projecting two dissimilar objects (which can be joined or superimposed to form a complete picture) in front of the two eyes.
- For example, when a picture of a bird is projected onto the right eye and that of a cage onto the left eye, an individual with presence of simultaneous perception will see the bird in the cage.

2. Grade-II - Fusion

- It consists of the power to superimpose two incomplete but similar images to form one complete image.
- The ability of the subject to continue to see one complete picture when his eyes are made to converge or diverge a few degrees, gives the positive and negative fusion range, respectively.

3. Grade-III - Stereopsis

- It consists of the ability to perceive the third dimension (depth perception).
- It can be tested with stereopsis slides in syno

1134. Inverted image in Purkinje test is formed from ?

a) Anterior surface of cornea

b) Posterior surface of c

c) Anterior surface of lens

d) Posterior surface of lens

Correct Answer - D

Ans. is 'd' i.e., Posterior surface of lens

Purkinje images test

- Normally, when a strong beam of light is shown to the eye, four images (Purkinje images) are formed from the four different reflecting surfaces :-
 - 1st from anterior surface of cornea → Erect and moves in same direction.
 - 2nd from posterior surface of cornea → Erect and moves in same direction.
 - 3rd from anterior surface of lens → Erect and move in same direction.
 - 4th from posterior surface of lens → Inverted and moves in opposite direction
- First three reflecting surfaces are convex and produce erect images, while 4th surface is concave, therefore produces inverted image. Presence of all four images indicates presence of a clear lens. In aphakia 3rd & 4th images are absent and only first two images are present. In cataract 4th image is absent and first 3 images are present.

1135. In aphakia purkinje images absent are ?

a) 1 & 3'

b) 2nd & 4^m

c) 2nd & 3rd

d) 3rd & 4th

Correct Answer - C
Ans. is 'c' i.e., 2nd & 3rd

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1136. Stocker's line is seen in?

a) Pterygium

b) Glaucoma

c) Posterior scleritis

d) Diabetic retinopathy

Correct Answer - A

Ans. is 'a' i.e., Pterygium

- *is line of iron deposition in the corneal epithelium seen adjacent to the head of the pterygium.*

1137. Cicatrising trachoma is seen in ?

a) Stage-1

b) Stage-2

c) Stage-3

d) Stage-4

Correct Answer - C

Ans. is 'c' i.e., Stage-3

- McCa Ian's classification-McCallan in 1908 divided the clinical course of trachoma into 4 stages

Stage 1

(Incipient trachoma)
Hyperaemia of palpebral

Immature follicle

Mild superficial punctate keratopathy

Stage 2
(Established tracoma)

Appearance of mature follicle & conjunctiva papillae

Progressive corneal pannus

Stage 3
(Cicatrising trachoma)

Scarring of palpebralconjunctiva

Scars are easily visibleas white bands Necrosis

Stage 4 (Healed trachoma)

Disease is cured or is not markable

Sequelae to cicatrisationcause symptoms

- Stage 2 is further subdivided into :-
- 2a (Ha) :- Presence of mature follicles
- b (Hb) :- Marked papillary hyperplasia

1138. All statements are true about trachoma except

- a) Trachoma is caused by bedsonian organism of psittacosis - lymphogranuloma - trachoma (PLT) group.
- b) Strains mainly responsible are A, B, Ba and C
- c) Marked papillary hyperplasia with limbal follicles are seen in stage III
- d) Corneal ulceration is a complication

Correct Answer - C

C. i.e. Marked papillary hyperplasia with limbal follicles are seen in stage III

>Trachoma is caused by a Bedsonian organism, the Chlamydia trachomatis belonging to the Psittacosis-lymphogranulomatrachoma (PLT) group.

>Serotypes A, B, Ba and C are associated with hyperendemic (blinding) trachoma, while serotypes D-K are associated with paratrachoma (oculogenital chlamydial disease).

>Congestion of upper tarsal and forniceal conjunctiva. 2.

Conjunctival follicles. Follicles look like boiled sagograins and are commonly seen on upper tarsal conjunctiva and fornix; but may also be present in the lower fornix, plica semilunaris and caruncle.

Sometimes, (follicles may be seen on the bulbar conjunctiva (pathognomic of trachoma).

>Pannus i.e., infiltration of the cornea associated with vascularization is seen in upper part

>Grading of trachoma McCallan's classification McCallan in 1908, divided the clinical course of the trachoma into following four stages: Stage I (Incipient trachoma or stage of infiltration). It is characterized

by hyperaemia of palpebral conjunctiva and immature follicles. Stage II (Established trachoma or stage of florid infiltration). It is characterized by appearance of mature follicles, papillae and progressive corneal pannus. Fig. 4.14. Trichomatous Herbert's pits. A B 66 Comprehensive OPHTHALMOLOGY Stage III (Cicatrising trachoma or stage of scarring). It includes obvious scarring of palpebral conjunctiva. Stage IV (Healed trachoma or stage of sequelae). The disease is quite and cured but sequelae due to cicatrization give rise to symptoms.

- The clinical diagnosis of trachoma is made from its typical signs; at least two sets of signs should be present out of the following: 1. Conjunctival follicles and papillae 2. Pannus progressive or regressive 3. Epithelial keratitis near superior limbus 4. Signs of cicatrization or its sequelae.

1139. In photophthalmia site of lesions is:

a) Cornea

b) Retina

c) Optic nerve

d) All of the above

Correct Answer - A
Ans. Cornea

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1140. Phlyctenular conjunctivitis is caused by

-

a) Chlaymydia

b) Staphylococcus

c) Pneumococcus

d) Aspergillus

Correct Answer - B

Ans. is 'b' i.e., Staphylococcus

Phlyctenular keratoconjunctivitis

- Phlyctenular conjunctivitis is an allergic response of the conjunctival and corneal epithelium to some endogenous allergens and characterized by formation of the phlyctens. Phlyctens are grey, yellow or pinkish white nodules slightly raised above the surface, are seen on the bulbar conjunctiva, generally near the limbus. Peak age group is 3-15 years with slight female preponderance.

1141. Schwable's ring is seen in which layer of cornea

a) Bowmann's membrane

b) Stroma

c) Descemet's membrane

d) Substantia propria

Correct Answer - C

Ans. is 'c' i.e., Descemet's membrane

Histology of cornea

- The cornea has five distinct layers (from superficial to deep) : ?
Epithelium : - It is the outermost part of cornea and is composed of stratified squamous non-keratinized epithelial cells.
Bowman's membrane : - It is not a true membrane but simply a condensed superficial part of stroma. destroyed, it does not regenerate.
Stroma (Substantia propria) : - This layer constitutes most of the cornea (90% of thickness). It consists of collagen fibrils (lamellae) embedded in hydrated matrix of proteoglycans.
Descemet's membrane : - This layer bounds the stroma posteriorly. In the periphery it appears to end at the anterior limit of trabecular meshwork as Schwahle's ring.
Endothelium : - It is a single layer of flat polygonal cells. The endothelial cells contain 'active-pump' mechanism and is the most important layer in maintaining the transparency of cornea.

1142. Scissor reflex is seen in ?

- a) Open angle glaucoma
- b) Phlyctenular conjunctivitis
- c) Keratoconus
- d) Interstitial keratitis

Correct Answer - C

Ans. is 'c' i.e., Keratoconus

- Keratoconus is a progressive, noninflammatory, bilateral ectatic corneal disease, characterized by paraxial stromal thinning and weakening that leads to corneal surface distortion.
- Essential pathological changes are thinning and ectasia which occur as a result of defective synthesis of mucopolysaccharide and collagen tissue.
- It usually starts at puberty and progresses slowly.
- Symptoms usually begin as blurred vision with shadowing around images.
- Vision becomes progressively more blurred and distorted with associated glare, halos around lights, light sensitivity and ocular irritation.
- Visual loss occurs primarily from irregular astigmatism and myopia, and secondarily from corneal scarring.
- The hallmark of keratoconus is central or paracentral stromal thinning, apical protrusion of anterior cornea and irregular astigmatism.
- The cornea thins near the centre and progressively bulges forwards, with the apex of cone always being slightly below the centre of the cornea.
- Important findings on examination are -

- 1. Distorted window reflex (Corneal reflex)Q.
- 2. Fleisher's ring.
- 3. Yawning reflex (Scissor reflex).
- 4. Oil drop reflex.
- 5. Munson's signs

Treatment includes :?

- 1. Spectacles for regular or mild irregular astigmatism.
- 2. Rigid gas permeable contact lens for higher astigmatism.
- 3. Epikeratoplasty in patients intolerant to lens and without significant corneal scarring.
- 4. Keratoplasty penetrating or deep lamellar if there is significant corneal scarring.

1143. Non-sterile hypopyon is seen in ?

a) Pneumococcus infection

b) Pseudomonas infection

c) Fungal infection

d) Gonococcal infection

Correct Answer - C

Ans. is 'c' i.e., Fungal infection

- Hypopyon refers to accumulation of polymorphonuclear leucocytes in the lower angle of anterior chamber. Many
- pyogenic organisms (Staphylococcus, streptococci, gonococci, Moraxella) and fungi may produce hypopyon but
- by far the most dangerous are pseudomonas pyogenea and pneumococcus.
- Thus, any corneal ulcer may be associated with hypopyon, however, it is customary to reserve the term 'hypopyon
- corneal ulcer' for the characteristic ulcer caused by pneumococcus and the term 'corneal ulcer with hypopyon' for
- the ulcers associated with hypopyon due to other causes. The characteristic hypopyon corneal ulcer caused by
- pneumococcus is called "ulcus serpens" .
- It is worth noting that the hypopyon in bacterial causes is sterile since the outpouring of polymorphonuclear cells is due to toxin and not due to actual invasion by bacteria. On the other hand, hypopyon in fungal (mycotic) corneal ulcer is non-sterile as there is direct invasion by fungi.

1144. Ameboid ulcer is a feature of

a) Parasitic corneal ulcer

b) Mycotic corneal ulcer

c) Herpetic corneal ulcer

d) Bacterial corneal ulcer

Correct Answer - C

Ans. is c i.e., Herpetic corneal ulcer

Herpetic Keratitis

- Most of the ocular infection are caused by HSV-1 except in neonates where eye infection can be caused by HSV2 through infected genitalia of mother. Ocular involvement by HSV may occur in two forms : -

Primary herpes : - Typically is a unilateral blepharoconjunctivitis which is characterized by vesicles on the skin of lids, follicular conjunctivitis, preauricular adenopathy and sometimes punctate keratitis.

Recurrent ocular herpes : - After primary infection, recurrent disease may involve any or all layers of the cornea. Recurrent herpetic keratitis is divided into : ?

1) **Epithelial keratitis** : - Manifestations of epithelial keratitis include : -

1. **Corneal vesicles** : - Vesicles coalesce and erupt to form dendritic or geographic ulcer.
2. **Superficial punctate keratitis**
3. **Dendritic ulcer** : - It is the most common presentation and is a typical lesion of herpes keratitis. There is an associated marked diminution of sensation.
4. **Geographic ulcer (amoeboid ulcer)**

2) **Stromal keratitis** : - Stromal keratitis may be of two types : -

.. **Disciform keratitis** : - This is due to damage to endothelial cells as a result of hypersensitivity reaction to the HSV antigen.

2. **Diffuse stromal necrotic keratitis** : - Caused by active viral invasion and tissue destruction.

3) **Metaherpatic keratitis (Epithelial sterile trophic ulceration)** : -

It is not an active disease, but is a mechanical healing problem at the site of previous herpetic ulcer.

1145. Keratitis in contact lens wearer is caused by all except ?

a) Pseudomonas

b) Pneumococcus

c) Aspergillus

d) Chlamydia

Correct Answer - B

Ans. is 'd' i.e., Chlamydia

Ectopia lentis

- o Ectopia lentis is defined as displacement or malposition of the crystalline lens of the eye. The lens is considered dislocated (luxated) when it lies completely outside the lens patellar fossa. The lens is **described** as subluxated when it is partially displaced but contained within the lens space. Causes are
 - i) **Homocystinuria**
 - ii) **Marfan syndrome**
 - iii) **Weil - Marchesani syndrome**
 - iv) Ehler Dan los syndrome
 - v) Hyperlysinemia
 - vi) **Sulphite oxidase deficiency**
 - vii) **Stickler syndrome**
 - viii) *Trauma*
 - ix) Consecutive / spontaneous (Hypermaturation cataract, buphthalmos, high myopia)

1146. Most common infection in contact lens users is?

a) Streptococcus

b) Pseudomonas

c) Staphylococcus

d) Neisseria

Correct Answer - B

Ans. is 'b' i.e., Pseudomonas

Complications of contact lens wear

- Complications of contact lens wearing are : ?
- Intolerance :- Some people find wearing contact lenses intolerable.
- Corneal complications :- Corneal abrasion, Corneal edema, Corneal vascularization, Microbial keratitis (Pseudomonas, acanthamoeba), Sterile corneal infiltrate.
- Giant papillary conjunctivitis
- Hypoxia :- Cornea is deprived of oxygen from the tear film by the presence of the contact lens. The cornea becomes edematous and new vessels may develop in the limbal area.
- Sensitivity :- This may develop in response to the preservative (thiomersal) in the cleaning and soaking solution. This results in allergic conjunctivitis.

1147. Immune ring is a feature of ?

- a) Interstitial keratitis
- b) Fungal corneal ulcer
- c) Bacterial corneal ulcer
- d) Herpes simplex keratitis

Correct Answer - B

Ans. is 'b' i.e., Fungal corneal ulcer

Clinical features of fungal (mycotic) corneal ulcer

- Symptoms are similar to bacterial corneal ulcers but in general they are less marked than the equal sized bacterial ulcer. On the other hand signs are very prominent, i.e. signs are more prominent than symptoms. Following signs can be seen : -
 1. Greyish-white dry looking ulcer with the elevated rolled out feathery & hyphate margins.
 2. Feathery finger like extension into surrounding stroma under intact epithelium.
 3. A sterile immune ring (yellow line) of Wesseley.
 4. Multiple small satellite lesions.
 5. Non-sterile (infected) hypopyon (Pseudohypopyon).
 6. Perforation is rare and corneal vascularization is conspicuously absent.

1148. Reis-Buckler dystrophy affects which layer of cornea

a) Epithelium

b) Stroma

c) Bowman's membrane

d) Endothelium

Correct Answer - C

Ans. is 'c' i.e., Bowman's membrane

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1149. Not true about Fuch's corneal dystrophy ?

- a) Posterior dystrophy
- b) Endothelial dystrophy
- c) Unilateral condition
- d) Occurs in old age

Correct Answer - C

Ans. is 'c' i.e., Unilateral condition

- Corneal dystrophies are bilateral.
- **Fuch's epithelial endothelial dystrophy**
- Fuchs dystrophy is frequently seen as a slowly progressive bilateral condition affecting females more than males, usually between fifth and seventh decade of life.
- Primary open angle glaucoma is its common association.
- Clinical features can be divided into following four stages :?
 1. Stage of cornea guttata: It is characterised by the presence of Hassal-Henle type of excrescences in the central part of cornea. A gradual increase of central guttae with peripheral spread and confluence gives rise to the so called 'beaten-metal ' appearance. The stage is asymptomatic.
 2. Oedematous stage or stage of endothelial decompensation is characterised by the occurrence of early stromal oedema and epithelial dystrophy. Patients complains of blurring vision.
 3. Stage of bullous keratopathy. This stage follows long-standing stromal oedema and is characterised by marked epithelial oedema with formation of bullae, which when rupture cause pain, discomfort and irritation with associated decreased visual acuity.
 4. Stage of scarring. In this stage epithelial bullae are replaced by scar

tissue and cornea becomes opaque and vascularized. The condition may sometimes be complicated by occurrence of secondary infection or glaucoma.

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1150. Superficial corneal vascularization is caused by?

a) Contact lens

b) Graft rejection

c) Chemical burn

d) Interstitial keratitis

Correct Answer - A

Ans. is 'a' i.e., Contact lens & 'to' i.e., Graft rejection

Superficial

Superficial corneal
ulcer

Contact lens user

Trachoma

Rosacea keratitis

Phlyctenular

keratoconjunctivitis o

Cornea graft rejection

Interstitial
keratitis

Disciform

keratitis

Deep corneal
ulcer

Chemical burns

Sclerosing
keratitis

Deep

- Viral infection can cause superficial corneal ulcer as well as disciform keratitis.

1151. Corneal sensations are decreased in all of the following conditions except:

a) Recurrent corneal erosion syndrome

b) Herpetic keratitis

c) Neuroparalytic keratitis

d) Leprosy

Correct Answer - A

Ans. Recurrent corneal erosion syndrome

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1152. Interstitial keratitis is seen in all except:

a) Syphilis

b) Acanthamoeba

c) HSV Chlamydia Trachomatis

d) HZV

Correct Answer - B

B i.e. Acanthamoeba

> acquired syphilis) Q - Herpetic keratitis (including chicken pox; HSV is now the most common cause) Other viral infections (HSV, Herpes zoster, Epstein Barr, mumps, measles etc) - Tuberculosis, leprosy - Sarcoidosis - Trypanosomiasis, - Malaria - Cogan's syndrome (d/t chlamydia etc) "

v:shapes="_x0000_s1027">**Interstitial keratitis (IK)**

Interstitial keratitis (IK) is non-suppurative inflammation of corneal stroma without primary involvement of epithelium or endothelium. In most cases the inflammation is an immune mediated process triggered by an appropriate antigen. Immune stromal keratitis manifests as focal, multifocal or diffuse stromal opacities or an immune ring. It is often accompanied by stromal edema and mild anterior chamber reaction, while sparing epithelium and endothelium. It is called *IK* if accompanied by vascularization. HSV is now the most common cause of IK (esp. unilateral). Unlike syphilitic (luetetic) IK, HSV neovascularization is usually sectoral & leads up to stromal scar.

- **Syphilis related (congenital >> acquired) IK** is usually bilateral, although usually not simultaneous. It presents with characteristic salmon patch appearance, granulomatous anterior uveitis, and ghost vessels and feathery deep stromal scarring in healed stage.

- **Cogan's syndrome** is *chronic bilateral deep nonsyphilitic IK with vestibuloauditory dysfunction (i.e. neuro sensory deafness, vertigo & tinnitus)* because of systemic autoimmune vasculitis (life threatening in 10%). Serum antibodies to various • infectious agents (**Lyme disease, Chlamydia, type 1 poliovirus**) have been associated with Cogan's syndrome.

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1153. Thickest portion of sclera is ?

a) Anterior to rectus muscle insertion

b) Posterior to rectus muscle insertion

c) Posterior pole

d) Limbus

Correct Answer - C

Ans. is 'c' i.e., Posterior pole

o The thickness of the sclera varies according to location : ?

- At the limbus, the sclera is 0.8 mm thick.
- Anterior to the rectus muscle insertions, it is 0.6 mm thick.
- Posterior to the rectus muscle insertions, it is 0.3 mm thick (Thinnest portion).
- At the equator, it is 0.5 to 0.8 mm thick.
- At the posterior pole, it is greatest than 1 mm thick.

1154. Thinnest portion of sclera ?

- a) Anterior to rectus muscle insertion
- b) Posterior to rectus muscle insertion
- c) Posterior pole
- d) Limbus

Correct Answer - B

Ans. is.b, Posterior to rectus muscle insertion

- Thinnest portion of sclera → Posterior to insertions of rectus muscle.
- Thickest portion of sclera → Posterior pole.

1155. Most common type of scleritis ?

a) Non-necrotizing

b) Necrotizing

c) Posterior

d) None

Correct Answer - A

Ans. is 'a' i.e., Non-necrotizing

SCLERITIS Scleritis refers to a chronic inflammation of the sclera proper. It is a comparatively serious disease which may cause visual impairment and even loss of the eye if treated inadequately.

It usually occurs in elderly patients (40-70 years) involving females more than the males.

Classification: I. Anterior scleritis (98%)

1. Non-necrotizing scleritis (85%)

(a) Diffuse (b) Nodular

2. Necrotizing scleritis (13%)

(a) with inflammation (b) without inflammation (scleromalacia perforans)

II. Posterior scleritis (2%)

1. Non-necrotizing anterior diffuse scleritis. It is the commonest variety, characterised by widespread inflammation involving a quadrant or more of the anterior sclera.

The involved area is raised and salmon pink to purple in colour.

1156. Drug of choice for intermediate uveitis ?

a) Atropine

b) Antibiotics

c) Topical steroids

d) Systemic steroid

Correct Answer - D

Ans. is 'd' i.e., Systemic steroids

Drugs used in acute anterior uveitis (iridocyclitis)

Topical steroids (Drugs of choice)

Mydriatic - cycloplegics: Atropine (Drug of 2nd choice), Homatropine, cyclopentolate, tropicamide, rnydracain (mixture of atropine, adrenaline & procaine)

Systemic steroids

NSAIDs

Systemic immunosuppressives cyclosporine, methotrexate, cyclophosphamide

Intermediate uveitis

Systemic steroids are the drug of choice

Posterior uveitis

(choroiditis)

Systemic steroids are the drug of choice

1157. Red keratic precipitates are seen in ?

a) Granulomatous uveitis

b) Hemorrhagic uveitis

c) Old healed uveitis

d) Acute anterior uveitis

Correct Answer - B

Ans. is .b i.e., Hemorrhagic uveitis

Keratic precipitates (KPs)

- KPs are proteinaceous cellular deposits occurring at the back of cornea (corneal endothelial deposits). Keratic precipitates are formed by the aggregation of polymorphonuclear cells, lymphocytes, and epithelioid cells. In the setting of uveitis, the microscopic appearance of KP may yield important diagnostic clues for the identification of the underlying inflammatory disorder :?

Mutton fat KP :- Large, yellowish KPs, are characteristic of granulomatous uveitis. These are composed of epithelioid cells and macrophages. They are large, thick fluffy, lardaceous KPs, having a greasy or waxy appearance.

Small or medium KPs (granular KPs):- These are composed of lymphocytes and are characteristic of non- granulomatous uveitis. These are small, round and whitish precipitates

Red KPs :- Composed of RBCs and inflammatory cells. These are seen in hemorrhagic uveitis.

Old KPs :- In healed uveitis. The above described KPs shrink, fade, become pigmented and irregular in shape with crenated margins.

1158. Snow banking is seen in?

- a) White coats disease
- b) Eales disease
- c) Diabetic nephropathy
- d) Intermediate uveitis

Correct Answer - D

Ans. is d i.e., Intermediate uveitis

- Pars planitis (Intermediate uveitis) denotes the inflammation of pars plana part of ciliary body and most peripheral part of the retina.
- Most common symptom is floaters; defective vision may also occur.
- Fundus examination in pars planitis reveals whitish exudates present near the ora serrata in the inferior quadrant.
- These typical exudates are referred as snow ball opacities.
- These may coalesce to form a grey white pique called snow banking.

1159. Which of the following indicates activity of anterior uveitis?

a) Cells in anterior chamber

b) Circumcorneal congestion

c) Keratic precipitate

d) Corneal edema

Correct Answer - A

Ans. is 'a' i.e., Cells in anterior chamber

- Activity of acute anterior uveitis is indicated by presence of cells (aqueous cells) and flare in anterior chamber → Grading is done on these two.

Grade	Aqueous cells	Grade	Aqueous flare
	0 cells		0 no flare
+	1-5 cells	+1	Just detectable
+1	6-10 cells	+2	Moderate flare
+2	11-20 cells	+3	Marked flare
+3	21-50 cells	+4	Intense flare
+4	> 50 cells		

1160. Panophthalmitis involves ?

- a) Inner coat of eyeball
- b) Inner and outer coat but sparing tenon's capsule
- c) All structure of eyeball including tenon's capsule
- d) None of the above

Correct Answer - C

Ans. is 'c' i.e., All structure of eyeball including tenon's capsule

Endophthalmitis

Endophthalmitis is defined as inflammation within the anterior segment (aqueous) or posterior segment (vitreous) or both together with partial thickness involvement of the adjacent ocular wall (one or more inner coats of the eye) Inflammation characteristically involves the the inner structures of the eye ball Le., uveal tissue (iris/ciliary body/ choroid) and Retina (Sclera is spared).

Panophthalmitis

Panophthalmitis is defined as inflammation within the anterior (aqueous) segment and' or posterior (vitreous) segment together with inflammation of all three coats of the eye. Panophthalmitis often starts as an endophthalmitis that then involves the sclera, tenon's capsule and may also involve the orbital tissue.

1161. Polyopia/diplopia is seen in which type of cataract?

a) Nuclear

b) Cortical

c) Posterior subcapsular

d) Anterior polar

Correct Answer - B
Ans. is 'b' i.e., Cortical

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1162. In senile nuclear cataract what type of myopia is seen?

a) Curvature myopia

b) Index myopia

c) Axial myopia

d) Positional myopia

Correct Answer - B

Ans. is 'b' i.e., Index myopia

- Nuclear changes of aging induce a modification of refractive index of lens and produce an index myopia.
- "Nuclear cataracts cause a general decrease in the transparency of the lens nucleus. They are associated with index myopia"

Ophthalmic study guide

Causes of errors of refraction

- Possible causes of ametropia are : ?
1) Axial
- It is the commonest form of ametropia (both myopia and hypermetropia). In hypermetropia, there is an axial shortening of eyeball. So, image is formed behind the retina. In myopia, there is an axial lengthening of eyeball. So, image is formed in front of the retina. 1 mm change in axial length leads to ametropia of 3D. For example 1 mm shortening in axial length causes hypermetropia of 3D.
- **2) Curvature**
- Change in the curvature of cornea or lens will cause ametropia. In hypermetropia, the curvature of cornea or lens is lesser than normal. In myopia, there is increase in curvature of cornea or lens./ mm

change in corneal curvature leads to 6-7 D ametropia.

3) Index

- If refractive index of optical system is low, it will result in hypermetropia and high refractive index will result in myopia.

4) Positional (Due to relative position of the lens),

- A forward shift of lens causes myopia, backward shift result in hypermetropia. Absence of lens (aphakia) causes hypermetropia.

5) Excessive accommodation

- Excessive accommodation due to spasm of accommodation causes myopia.

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1163. Cataract is caused by ?

a) Hypoparathyroidism

b) Cigarette smoking

c) Non-ionizing radiation

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

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1164. "Bread-crumbs" appearance is seen in ?

a) Diabetic cataract

b) Toxoplasmosis

c) CMV retinitis

d) Complicated cataract

Correct Answer - D

Ans. D. Complicated cataract

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1165. Elschnig's pearls are a sign of:

a) Chronic uveitis

b) Secondary cataract

c) Cystoid macular oedema

d) All of the above

Correct Answer - B
Ans. Secondary cataract

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1166. Posterior lenticonus is seen in ?

a) Alport's syndrome

b) Lowe's syndrome

c) Marfan syndrome

d) Homocystinuria

Correct Answer - B

Ans. is 'b' i.e., Lowe's syndrome

- Lenticonus refers to cone-shaped elevation of the anterior pole (anterior lenticonus) or posterior pole (posterior lenticonus) of the lens.
- Anterior lenticonus is seen in Alport's syndrome.
- Posterior lenticonus is seen in Lowe's syndrome.
- On distant direct ophthalmoscopy, lenticonus present as an oil globule lying in the center of red reflex.
- Slit-lamp examination confirms the diagnosis.

1167. Ectopia lentis is/are associated with:

a) Homocystinuria

b) Alport syndrome

c) Lowe syndrome

d) Marfan syndrome

e) Sulphite oxidase deficiency

Correct Answer - A:D:E

Answer- (A) Homocystinuria (D) Marfan syndrome (E) Sulphite oxidase deficiency

- Marfan syndrome
- Homocystinuria
- Weil-Marchesani syndrome
- Sulfite oxidase deficiency
- Hyperlysinemia

1168. Bilateral inferior lens subluxation is seen in?

a) Marfan syndrome

b) Homocysteinuria

c) Ocular trauma

d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Homocysteinuria

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1169. Foldable lens is made up of?

a) PMMA

b) Silicon

c) Hydrogel

d) None

Correct Answer - B

Ans. is 'b' i.e., Silicon

Depending on the material of manufacturing, following types of IOLs are there :-

- **Rigid IOLs :-** Made entirely from polymethyl methacrylate (PMMA).
- **Foldable IOLs :-** Are used after phacoemulsification and are made of silicon, acrylic, hydrogel and collamer.
- **Rollable IOLs :-** Ultra thin IOLs and are used after phakemix technique (micro- incision : 1mm). These are made of hydrogel.

1170. Von Herick angle grade '3' of anterior chamber denotes

a) Wide open angle

b) Moderately open angle

c) Moderately narrow angle

d) Closed angle

Correct Answer - B

Ans. is 'b' i.e., Moderately open angle

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1171. Krukenberg spindles -

- a) Involves anterior surface of cornea
- b) Involves anterior lens surface
- c) Involves posterior surface of cornea
- d) Involves posterior surface of lens

Correct Answer - C

Ans. is 'c' i.e., Involves posterior surface off cornea

Pigmentot-v glaucoma

- It is a type of secondary open angle glaucoma where in clogging up of trabecular meshwork occurs by the pigment particles.
- The condition typically occurs in young myopic males.
- The characteristic feature is the deposition of pigment granules in the anterior segment structures such as iris, posterior surface of the cornea (Krukenberg's spindle), trabecular meshwork, ciliary zonul es and the crystalline lens.
- Gonioscopy shows pigment accumulation along the schwalbe's line especially inferiorly (Sampalesi's line).
- Iris transillumination shows radial slit-like transillumination defects in the mid periphery (pathognomonic feature).
- Treatment is as for primary open angle glaucoma

1172. Most common symptom in buphthalmos is?

a) Lacrimation

b) Pain

c) Photophobia

d) Itching

Correct Answer - A

Ans. is 'a' i.e., Lacrimation

The commonest symptom is watering"

In Buphthalmos

- Most common symptom → Watering (lacrimation)
- 2nd most common symptom → Photophobia
- Most troublesome symptom → Photophobia (Child avoids light) o
- First sign → Corneal edema with watering
- Frosted glass appearance of the cornea (hazy cornea)
- Haab striae
- Large cornea
- Deep anterior chamber
- Lens anteroposteriorly flat

1173. Habbs striae are seen in ?

a) Buphthalmos

b) Keratoglobus

c) Trachoma

d) Keratoconus

Correct Answer - A

Ans. is 'a' i.e., Buphthalmos

Examination findings of primary congenital glaucoma (buphthalmos)

- First sign is corneal edema with watering of eye with marked photophobia
- Haab striae (Discrete corneal opacities appear as lines with double contour due to rupture in Descemet's membrane)
- Cornea is hazy with frosted glass appearance.
- Corneal enlargement
- Thin & blue sclera
- Deep anterior chamber
- Lens is antero-posteriorly flat and may be subluxated backward
- Iridodonesis (tremulous iris) and atrophic patch on iris
- Large eye (Buphthalmos or hydrophthalmos)
- Variable cupping and atrophy of disc
- Raised IOP (neither acute nor marked)
- Axial myopia due to increased axial length which may give rise to anisometropic amblyopia

1174. Drug of choice for open angle glaucoma

-

a) Acetazolamide

b) Latanoprost

c) Timolol

d) Brimonidine

Correct Answer - C

Ans. is 'c' i.e., Timolol

Important acts

Angle closure glaucoma

Treatment of choice for acute congestive glaucoma Laser iridotomy (1st choice), Peripheral iridectomy (2nd choice)

Drug of choice for acute congestive glaucoma Pilocarpine

Initially IOP is controlled (first drug used) → Systemic mannitol or acetazolamide

Open angle glaucoma

Treatment of choice
drugs

Drug of choice
betaxolol, levobunolol)

Surgery of choice
trabeculoplasty

Topical antiglaucoma

β₃ - blocker (Timolol,

Argon or diode laser

1175. Acute angle closure glaucoma first line treatment?

a) Iv mannitol

b) Acetazolamide

c) Pilocarpine

d) Beta blocker eyedrops

Correct Answer - A

Ans. is 'a' i.e., I.V. Mannitol

Treatment of angle closure glaucoma

- Definitive treatment (treatment of choice) is surgery. However, initially drugs are used to decrease IOP during an acute attack. Approach of treatment is as follows:-
- Start i.v. mannitol or i.v. acetazolamide
- When IOP starts falling, start topical pilocarpine or β -blocker (timolol).
- Apraclonidine/latanoprost may be added.
- Once IOP is reduced, surgery is done.
- Topical pilocarpine 2% is the preferred antiglaucomatous drug.
- After control of IOP, Laser (Nd : YAG) peripheral iridotomy is the definitive management of choice. If laser is not available surgical peripheral iridectomy is the procedure of choice. Other surgical procedures used are *filtration surgeries* (like trabeculectomy, deep sclerotomy, *Viscoanulostomy*).
- Symptomatic treatment during an attack also includes *analgesics, antiemetic and topical corticosteroids* to reduce inflammation. Mydriatics (e.g. atropine) are contraindicated as they precipitate glaucoma.
- PACG is a bilateral disease, the fellow eye is at risk of developing an

acute attack in 50% cases in future. Therefore a prophylactic peripheral laser iridotomy should be performed in the fellow eye.

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1176. Which of the following antiglaucoma medications can cause drowsiness?

a) Latanoprost

b) Timolol

c) Brimonidine

d) Dorzolamide

Correct Answer - C
C i.e. Brimonidine

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1177. Posner-schlossman syndrome is ?

- a) Ipsilateral optic atrophy with contralateral papilloedema
- b) Unilateral glaucomatous changes with mild anterior uveitis
- c) Granulomatous uveitis with iris heterochromia
- d) None of the above

Correct Answer - B

. Ans. is 'b' i.e., Unilateral glaucomatous changes with mild anterior uveitis

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1178. Causes of exudative retinal detachment are all except-

- a) Toxemia of pregnancy
- b) Scleritis
- c) High myopia
- d) Central serous retinopathy

Correct Answer - C

Ans. is 'c' i.e., High myopia

Cause: retinal detachment

.. Rheumatogenous

- High myopia, Cataract extraction (Aphakia, pseudophakia), Trauma, Retinal degeneration (1 l ice degeneration, snail track degeneration, retinoschisis).

Exudative

.. Systemic disease Toxaemia of pregnancy, renal hypertension, blood dyscrasias & polyarteritis nodosa.

.. Ocular disease

- Inflammation : Harada's disease, sympathetic ophthalmitis, posterior scleritis & orbital cellulitis q Vascular : Central serous retinopathy, exudative retinopathy of coats
- Neoplasm : Malignant melanoma of choroid, retinoblastoma (exophytic type)
- Sudden hypotony : perforation of globe, intraocular operation
- .. Other causes : Uveal effusion syndrome, choroidal neovascularisation, haemangioma & metastatic tumour of choroid.

Tractional

- Penetrating injury, Proliferative diabetic retinopathy, sickle cell retinopathy, Retinopathy of prematurity, CRVO, Eale's disease, post-

hemorrhagic retinitis proliferan - Toxoc iasis, plastic cyclitis

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1179. Primary aim of retinal detachment surgery

- a) Removal of vitreous
- b) Drainage of subretinal fluid
- c) Vitrectomy
- d) Encirclage

Correct Answer - D

D i.e. Encirclage

The main objective of the treatment of retinal detachment is to *seal and support the retinal break*.

**1180. Neovascularization in uveal tissue
[Rubeosis Iridis] is most commonly
caused by**

a) Diabetic Retinopathy

b) CRVO

c) CRAO

d) Choroidal melanoma

Correct Answer - A

Answer- A. Diabetic Retinopathy

It is a secondary angle closure glaucoma which results due to formation of neovascular membrane over the iris i.e., neovascularization of iris (rubeosis iridis).

Causes of rubeosis iridis are:-

- Common :- Diabetic retinopathy (most common cause), central retinal vein occlusion, Eale's disease, sickle-cell retinopathy.

1181. Retinal detachment occurs between

- a) Layers of neurosensory retina
- b) Neurosensory retina and pigment epithelium
- c) Pigment epithelium and choroid
- d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Neurosensory retina and pigment epithelium

- Retina has total ten layers from with out inward :- (i) Pigmented epithelium, (ii) Layers of Rods & cones, (iii) External limiting membrane, (iv) Outer nuclear layer, (v) Outer plexiform layers, (vi) Inner nuclear layer, (vii) Inner plexiform layer, (viii) Ganglionic cell layer, (ix) Nerve fibre layer, (x) Internal limiting membrane
- Broadly these layers are subdivided into two layers based on the function :?
- Neurosensory layer or sensory layer (containing layers ii to x of above 10 layers) :- for vision.
- **Pigmented epithelium (layer i) :-** Provide metabolic support to neurosensory layer and acts as an antireflective layer.
- So, inner layers are included in neurosensory layer and outer most layer is retinal pigmented epithelium(RPE).
- Retinal detachment is a disorder of eye in which retina peels away from its underlying layer of support tissue. Usually
- there is separation between the neuroepithelium (neurosensory epithelium or sensory epithelium) and the pigmented
- layer, because there is a potential space between these two layers where fluid can accumulates and can cause separation.

1182. All are seen in non-proliferative diabetic retinopathy except ?

a) Microaneurysm

b) Neovascularization

c) Hard exudates

d) Macular edema

Correct Answer - B

Ans. is 'b' i.e., Neovascularization

Classification of Diabetic retinopathy

Nonproliferative	Proliferative
Background retinopathy	
1. Microaneurysm	
2. Dot and blot hemorrhage (deep hemorrhage)	Neovascularization of the disc (NVD)
3. Hard exudate	1. Neovascularization elsewhere in the retina (NVE)
4. Macular edema	2. Vitreous hemorrhage
B) Preproliferative retinopathy	3. Fibrovascular proliferation
1. Cotton-wool spots (soft exudates)	4. Trsction retinsl detachment
2. Venous beading	5. Iris surface neovascularization (rubeosis iridis or neovascular glaucoma)
3. Extensive hemorrhage	
4. Intraretinal intravascular abnormalities (IRMA)	

1183. All are seen in CMV retinitis except

- a) Immunosuppression
- b) Brush-fire appearance Pattern
- c) Crack mud appearance
- d) Perivasculitis

Correct Answer - C

Answer- C. Crack mud appearance

- CMV retinitis is the most common ophthalmic manifestation of CMV.
- There is characteristic hemorrhagic, full thickness retinitis.
- Occurring as a congenital infection in infants or an opportunistic infection in the immunocompromised host.
- CMV retinitis is a white granular geographic lesion that clears centrally as it enlarges, leaving a quiet central area of retinal atrophy and mottled pigment epithelium. This has also been described as "brush-fire pattern."
- Perivascular retinitis- Frosted branch angitis with retinal perivasculitis.

1184. Umbrella configuration on fluorescein angiography is seen in ?

- a) Retinitis pigmentosa
- b) Rheumatoid retinal detachment
- c) Central serous retinopathy
- d) Eale's disease

Correct Answer - C

Ans. is 'c' i.e., Central serous retinopathy

Central serous retinopathy

- Central serous retinopathy is caused by an accumulation of transparent fluid at the posterior pole especially at macula causing a circumscribed area retinal detachment in the macular region.
- There is detachment of neurosensory retina (layers of rods and cones) with or without retinal pigment epithelium detachment.
- The condition affects males between 20-40 years of age.
- Patient presents with a sudden onset of painless loss of vision associated with relative positive scotoma, micropsia and metamorphosia.
- Ophthalmoscopic findings include mild elevation of macular area demarcated by a circular ring reflex and foveal reflex is distorted or absent.
- The diagnosis is confirmed by fluorescein angiography. It shows focal leakage of fluorescein in following two patterns : ?

Ink-blot pattern or enlarging dot sign :- A small hyperfluorescent spot which gradually increases in size.

Smoke-stack pattern :- Small hyperfluorescent spot which ascends vertically like a smoke stack and gradually spreads laterally to take a mushroom or umbrella configuration

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1185. Photoretininitis is due to?

a) Snow reflection

b) Solar eclipse

c) Blunt trauma

d) None of the above

Correct Answer - B

Ans. is b i.e., Solar eclipse

Photoretininitis

- Photoretininitis refers to damage to the retina resulting from exposure to the sunlight without adequate protection.
- In recent years it has become clear that photoretininitis is the result of photochemical reaction following exposure
- of the retina to shorter wave-length in the visible spectrum (i.e. blue/violet-blue light) with a small contribution
- by UV-A rays (and not by infrared rays which was thought earlier).
- Therefore, photoretininitis is also called as blue-light retinal injury.
- Photoretininitis is associated with religious sun gazing, solar eclipse observing, telescopy solar viewing, watching bright sunlight, or exposure to the flash of the short-circuiting of a strong current.
- The symptoms are persistent of the after image, progressing later into positive scotoma, and metamorphosia.
- Ophthalmoscopically, there may be no sign at first, or a pale spot is seen at the fovea with a brownish-red ring around it.
- Later there are deposit of pigments and small, grey punctate spots around the fovea, or even the formation of retinal hole

1186. Birdshot retinopathy is characterized by all except?

a) Common in females

b) Unilateral

c) HLA-A29 positive

d) Creamy yellow spots

Correct Answer - B

Ans. is 'b' i.e., Unilateral

Bird-shot retinochoroidopathy

- It is a rare, idiopathic, bilaterally symmetrical chronic multifocal chorioretinitis characterised by numerous flat
- creamy-yellow spots due to focal chorioretinal hypopigmentation, resembling the pattern of "bird-shot scatter from a shotgun".
- The disease, more common in females than males, typically affects middle-aged healthy persons who are positive for HLA-A29.
- It runs a long chronic course of several years.
- Treatment with corticosteroids is usually not effective

1187. The most common cause of vitreous hemorrhage in adults is

a) Retinal hole

b) Trauma

c) Hypertension

d) Diabetes

Correct Answer - D

Ans. is 'd' i.e., Diabetes

Diabetic retinopathy is the commonest cause of spontaneous vitreous hemorrhage in adults". ___ Parson's

"Most common cause of vitreous hemorrhage is diabetic retinopathy in adults". — Atlas of ophthalmology

Causes of vitreous hemorrhage

Posterior vitreous detachment

Coat's disease

Retineal tear (break) due to trauma

Hypertensive retinopathy,
or vitreous traction.

Proliferative diabetic retinopathy
periphlebitis or uveitis

Branched retinal vein occlusion
(Polycythemia, anemia, SCA)

Age- related macular degeneration

Retinal macroaneurysm

Eale's disease &

Vascular disorders :-

CRVO

Acute chorioretinitis,

Bleeding disorders

Neoplasm

Treson syndrome

1188. Choroidal vascularization is seen in ?

a) Myopia

b) Hypermetropia

c) Presbyopia

d) Astigmatism

Correct Answer - A

Ans. is 'a' i.e., Myopia

Causes of choroidal neovascularization

- Age-related macular degeneration (ARMD)-most significant
- Choroidretinal scars
- Angioid streaks
- Intraocular inflammation
- Choroidal rupture (trauma)
- Choroidretinal dystrophy
- Pathological myopia

1189.

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Longest part of optic nerve ?

a) Intraocular

b) Intracranial

c) Intraorbital

d) Intracranial

Correct Answer - C

. Ans. is 'c' i.e., Intraorbital

Optic nerve

- Each optic nerve (*second cranial nerve*) starts from the optic disc and extends up to optic chiasma, where the two nerves meet.
- It is the backward continuation of the nerve fibre layer of the retina, which consists of the *second order neurons i.e.*, axon originating from the ganglion cells.
- It also *contains the afferent fibres of the papillary light reflex*.
- Morphologically and embryologically, the optic nerve is comparable to a sensory tract.
- Unlike peripheral nerves *it is not covered by neurilemma* (so it does not regenerate when cut).
- The fibres of optic nerve, numbering about a million, are very fine (2-10 m in diameter as compared to 20 mm of sensory nerves).
- Optic nerve is about 47-50 mm in length and can be divided into 4 parts : ?
- Intraocular part (1 mm) : - It begins at optic disc (optic nerve head) and exits the nerve through a hole in sclera that is occupied by a mesh like structure called the *lamina cribrosa*. The nerve fibres from the retina leave the eye through pores (holes) in lamina cribrosa, a sieve-like structure made up of collagen meshwork.
- Intraorbital part (30 mm) : - Extends from back of the eyeball (at

lamina cribrosa) to the optic foramina.

- Intracanalicular part (6-9 mm) : - It lies within the optic canal and closely related to ophthalmic artery which crosses obliquely over it.
- Intracranial part (10 mm) : - It lies above the cavernous sinus and converges with its fellow from contralateral side to form optic chiasma.
- Like other parts of CNS, the optic nerve is covered by meningeal sheaths (Pia, archnoid and dura mater) as soon as the nerve leaves the eyeball.

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1190. Nerve carrying motor component of light reflex?

a) 1st nerve

b) 2nd nerve

c) 3rd nerve

d) 4th nerve

Correct Answer - C

Ans. is 'C' i.e., 3rd nerve

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1191. Marcus Gunn pupil is due to ?

- a) Total afferent pupillary defect
- b) Relative afferent pupillary defect
- c) Efferent pathway defect
- d) Cerebral lesion

Correct Answer - B

Ans. is 'b' i.e., Relative afferent papillary defect

Marcus Gunn pupil

- Marcus Gunn pupil is seen in relative afferent pathway defect (RAPD)
- An incomplete optic nerve lesion or retinal disease cause it (in contrast to amaurotic light reflex, where there is total afferent pathway defect). It is best tested by swinging flash light test.
- To perform this test, a bright flash light is shone to one pupil and constriction of that pupil is noted.
- Then the flashlight is quickly moved to the contralateral pupil and the response in that pupil is noted.
- This swinging to and fro of the flashlight is repeated several times while the pupillary response is observed.
- Normally, both pupils constrict equally and the pupil to whom light is transferred remains tightly constricted.
- In the presence of relative afferent pupillary defect in one eye, both the pupil will dilate when the flash light
- is moved from the normal to the abnormal eye.
- This is a paradoxical response.
- This is called Marcus Gunn pupil and is the earliest indicator of optic nerve disease even in the presence of a normal visual acuity.
- Relative afferent papillary defect (RAPD) or Marcus Gunn pupil is a

reliable and objective sign of unilateral or asymmetric disease or any lesion in afferent papillary pathway, i.e., retina, optic nerve, optic chiasma, optic tract or midbrain (pretectal nucleus).

- However, RAPD is most characteristic of lesions in the optic nerve.

1192. Normal vision with absence of direct & consensual light reflex, which nerve is involved ?

a) Optic

b) Oculomotor

c) Trigeminal

d) Abducens

Correct Answer - B

Ans. is 'b' i.e., Oculomotor

This question can be solved by simple basic knowledge :-

Among the given options only optic nerve and oculomotor nerves are related to light reflex'

a) In optic nerve injury vision is also impaired (vision is normal in the question)'

n Thus answer is oculomotor nerve

- When light is shone to one (e.g. left) eye. left optic nerve carries afferent impulse to brain and from brain efferent
- impulse to ipsilateral (left) eye comes through ipsilateral (left) oculomotor nerve (for direct light reflex) and efferent
- for contralateral (right) eye comes through contralateral (right) oculomotor nerve for consensual light reflex' When
- light is shone to other (right) eye, right optic nerve carries afferent impulse to brain and from brain, efferent impulse to
- right eye (for direct light reflex) comes through right oculomotor nerve and efferent for left eye (for consensual light reflex) comes through left oculomotor nerve' So :-
- Optic nerve is responsible for direct light reflex in ipsilateral eye and

- consensual light reflex for contralateral eye. (In above example, afferent for right sided direct and left sided consensual light reflex is through right optic nerve; and afferent for left sided direct and right sided consensual light reflex is through left optic nerve)
- Oculomotor nerve is responsible for direct and consensual light reflex in the same eye' (In above example'
- efferent for right sided direct as well as consensual light reflex is through right oculomotor nerve and efferent for
- left sided direct as well as consensual light reflex is through left oculomotor nerve)

In complete optic nerve lesion of one side (Amaurosis light reflex or total afferent pupillary defect)

The ipsilateral direct reflex is lost

The ipsilateral consensual reflex is intact

The contralateral direct reflex is intact

The contralateral consensual reflex is lost

In oculomotor nerve lesion of one side (efferent pupillary defect)

The ipsilateral direct reflex is lost

The ipsilateral consensual reflex is lost

The contralateral direct reflex is intact

The contralateral consensual reflex is intact

1193. Foster Kennedy syndrome is

- a) I/L Papilloedema C/L optic atrophy
- b) I/L Optic atrophy C/L papilloedema
- c) I/L Optic atrophy and papilloedema
- d) UL Papilloedema C/L papilitis

Correct Answer - B

Ans. is 'c' i.e., I/L Optic atrophy C/L papilloedema

- Foster-Kennedy syndrome : - The frontal lobe, pituitary and middle-ear tumor such as meningioma of the olfactory
- groove are sometimes associated with ipsilateral pressure atrophy of the optic nerve and contralateral papilloedema.
- Pseudo-Foster-Kennedy syndrome : - It is characterized by occurrence of unilateral papilloedema associated with
- raised ICT (due to any cause) and a pre-existing optic atrophy (due to any cause) on the other side.

1194. Altitudinal visual field defect is seen in ?

- a) Papilloedema
- b) Retinitis pigmentosa
- c) Anterior ischemic neuropathy
- d) Buphthalmos

Correct Answer - C

Ans. is 'c' i.e., Anterior ischemic neuropathy

Anterior ischemic optic neuropathy (AION)

- It is a condition of local anoxia of the anterior region of the optic nerve.
- It is due to the *involvement of posterior ciliary artery and may be central retinal artery* causing infarct of the anterior part of the optic nerve and retina.
- It occurs commonly in *neglected acute attack of closed angle glaucoma, severe anemia, after a massive haemorrhage, and temporal arteritis.*
- There is *sudden loss of vision.*
- On examination there is swelling of the disc resulting in optic atrophy.
- Permanent altitudinal visual field defects are present.
- These involve two quadrants of either the superior or inferior visual field.

1195. Ocular bobbing?

a) Midbrain

b) Pons

c) Medulla

d) Cortex

Correct Answer - B

Ans. is 'b' i.e., Pons

Square-wave jerks

Not localizing

Macro square-wave jerks

Cerebellum

Macrosaccadic oscillation

Cerebellum

Voluntary nystagmus

Volitional

Saccadic pulses

Cerebellum, lower brainstem

Ocular flutter

Cerebellum, lower brainstem

Opsoclonus

Cerebellum, lower brainstem

Ocular bobbing

Pons

1196. Elevators of eye:

a) SR and IO

b) IO and SO

c) IR and S

d) SO SR

Correct Answer - A
Ans. SR and IO

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1197. Yoke muscle for left superior rectus is ?

- a) Right superior rectus
- b) Left inferior rectus
- c) Right inferior oblique
- d) Right superior oblique

Correct Answer - C

Ans. C. Right inferior oblique

Yoke muscles (contralateral synergists).

It refers to the pair of muscles (one from each eye) which contract simultaneously during version movements.

For example, right lateral rectus and left medial rectus act as yoke muscles for dextroversion movements.

Other pair of yoke muscles are right MR and left LR, right LR and left MR, right SR and left IO, right SO and left IR and right IO and left SR.

1198. Downward and outward moment of eye is effected in injury of?

a) 3rd nerve

b) 4th nerve

c) 5th nerve

d) 6th nerve

Correct Answer - B

Ans. B. 4th nerve

Downward and outward movement is caused by superior oblique, supplied by trochlear (4th nerve).

1199. Distance of medial rectus from limbus -

a) 4.5 mm

b) 5.5 mm

c) 7.0 mm

d) 10 mm

Correct Answer - B

Ans. is 'b' i.e., 5.5 mm

Muscle Distance of insertion from limbus

Medial rectus 5.5 mm

Inferior ectus 6.5 mm

Lateral rectus 6.9 mm

Superior ectus 7.7 mm

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1200. Duane syndrome involves?

a) Superior oblique

b) Inferior oblique

c) Lateral rectus

d) Superior rectus

Correct Answer - C

Ans. is 'c' i.e., Lateral rectus

- retraction syndrome represents the most frequent and most prominent congenital cranial dysinnervation disorder (CCDD).
- It is due to fibrosis of the lateral rectus or an innervational anomaly with Co-contraction of the lateral and medial recti.
- There is deficiency of abduction, associated with impaired adduction, contraction of palpebral fissure and oblique movements of the eye.

1201. Down-beat nystagmus is seen in lesion of ?

a) Brainstem

b) Cerebellum

c) Basal ganglia

d) Hippocampus

Correct Answer - B

Ans. is 'b' i.e., Cerebellum

- Central vestibular nystagmus may be of following types ?

Up-beat nystagmus

In primary position of gaze, the fast component is upward.

It is seen in lesions of central tegmentum of brain-stem.

Down-beat nystagmus

In primary position of gaze, the fast component is downward.

It is usually associated with posterior fossa disease and is typical of compression at the level of foramen magnum.

It is a common feature of cerebellar lesions and Arnold-chiary syndrome.

Periodic alternative nystagms

It is a jerk nystagmus which shows fluctuations in amplitude and direction.

It may occur due to vascular or demyelinating vascular or brainstem-cerebellar lesions.

1202. Down beat nystagmus is seen in?

a) Arnold chiari malformation

b) Brain stem damage

c) Pontine hemorrhage

d) Labyrinthine damage

Correct Answer - A

Ans. is 'a' i.e., Arnold chiari malformation

- Down-beat nystagmus are seen in cerebellar lesion and Arnold-chiari malformation

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1203. Forced duction test is to find out?

a) Ocular muscle palsy

b) Ocular muscle spasm

c) Angle of deviation

d) Refractive error

Correct Answer - A

Ans. is 'a' i.e., Ocular muscle palsy

Forced duction test

- It is performed to differentiate between the incomitant squint due to paralysis of extraocular muscle and that due to mechanical restriction of the ocular movements.
- FDT is positive (resistance encountered during passive rotation) in cases of incomitant squint due to mechanical restriction and negative in cases of extraocular muscle palsy.

1204. Positive forced duction test is seen in ?

- a) Extraocular muscle palsy
- b) Mechanical restriction of ocular movement
- c) Concomitant squint
- d) None

Correct Answer - B

Ans. is 'b' i.e., Mechanical restriction of ocular movement

- forced duction test : Resistance encountered during passive rotation and is seen in incomitant squint due to mechanical restriction.
- Negative forced duction test : No resistance during passive rotation and is seen in extraocular muscle palsy

1205. Most common site of distant metastasis in intraorbital malignant melanoma is?

a) Brain

b) Lung

c) Liver

d) Lymph nodes

Correct Answer - C

Ans. is 'c' i.e., Liver

- Malignant melanoma mostly arise in uvea and uveal malignant melanoma is the most common primary intraocular tumor.
- The most common site for distant metastasis of uveal melanoma is liver.
- The liver is the most common site of metastasis of uveal melanoma" — Clinical oncology
- The liver is the most common site of metastasis from primary ocular melanoma" — Smith & Nesi's
- **Uveal melanoma**
- Uveal melanoma is the most common primary intraocular tumor in adults.
- Most of the (85%) uveal melanomas arise in the choroid.
- So, choroidal melanoma is the most common primary intraocular tumor in adults.
- Tumor arises from dendritic melanocytes (neural crest, neuroectodermal origin).
- Histologically choroidal melanoma can be divided into: -
• **Spindle cell melanomas** : - These melanomas contain predominantly spindle cells.
- These melanomas are further subdivided into Spindle A or Spindle B

depending upon the type of cells.

Epitheloid cell melanomas : - Contain epitheloid like cells.

Mixed cell melanomas : - Contain both spindle cells and epitheloid cells.

- Choroidal melanoma presents as a sessile or dome shaped mass located deep to the sensory retina.
- A secondary non-rheugmatogenous retinal detachment frequently occurs.

Involvement of vortex vein by tumor results in glaucoma.

- With continued growth, a choroidal melanoma can rupture Bruch's membrane and assume a mushroom shape.
- When that occurs, tumor has a tendency to bleed, and vitreal or subretinal hemorrhage may occur.

1206. The earliest change noticed in hypertensive retinopathy is:

a) Soft exudate

b) Arteriolar spasm

c) Venospasm

d) Hard exudate

Correct Answer - B
Ans. Arteriolar spasm

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1207. Basal cell carcinoma is seen in most commonly in which eyelid?

a) Upper medial

b) Upper lateral

c) Lower medial

d) Lower lateral

Correct Answer - C

Ans. is 'c' i.e., Lower medial

- Basal cell carcinoma is the commonest malignant tumor of the lids (90%) usually seen in elderly people.
- It is locally malignant and involves most commonly lower lid (50%) followed by medial canthus (25%), upper lid (10-15%) and outer canthus.

"Basal cell carcinoma is seen in the lower lid near the inner canthus usually"

Renu Jogi

1208. Most common cause of ptosis ?

- a) Myasthenia gravis
- b) Paralysis of 3rd nerve
- c) Idiopathic
- d) Congenital

Correct Answer - D

Ans. is 'd' i.e., Congenital

Ptosis

- Ptosis is drooping of upper eyelid. Ptosis occurs when the muscles that raise the eyelid (*levator palpebrae superioris* and *müller's muscles*) are not strong enough to do so properly. Etiology of Ptosis may be :?

A) Congenital myogenic ptosis :- It is the *most common type of ptosis* and is often bilateral.

- It is associated with maldevelopment or congenital weakness of levator palpebrae superioris. Congenital myogenic ptosis is characterized by drooping of one or both lids at birth, with a diminished or absent lid crease and lid lag on downgaze due to tethering effect of abnormal muscle. It may occur in following forms
- *Simple congenital ptosis :-* Not associated with other anomaly
- *Congenital ptosis with superior rectus weakness*
- *Blepharophimosis syndrome* Congenital ptosis, blepharophimosis, telecanthus and epicanthus inversus.
- Congenital synkinetic ptosis (Marcus Gunn jaw-winking Ptosis):- Retraction of ptotic lid with jaw movement like chewing, i.e., with stimulation of ipsilateral pterygoid muscle.

B) Acquired ptosis :- Depending upon the cause acquired ptosis may be

- **Neurogenic** :- It is due to paralysis of 3rd nerve, Horner's syndrome, ophthalmoplegic migraine, multiple sclerosis. Neurogenic ptosis may also occur due to lesion of sympathetic nerve) supplying muller's muscle.
- **Myogenic** :- It is due to acquired defect of LPS muscle and may be seen in myasthenia gravis, dystrophia myotonica, ocular myopathy, oculopharyngeal muscular dystrophy, thyrotoxicosis, Lambert - Eaton myasthenia syndrome
- **Mechanical**:- It is due to excessive weight on the upper lid e.g in lid tumors, multiple chalazia, lid edema. It may also occur due to scarring (*cicatricial ptosis*) in atients with ocular pemphigoid and trachoma.
- **Aponeurotic ptosis** :- It is due to defect of the levator aponeurosis in the presence of normal functioning muscle, e.g. involutional (senile) ptosis, post-operative ptosis.

1209. Upper Lid Retractors include

- a) Muller muscle and superior rectus
- b) Levator palpebrae superioris and superior oblique
- c) Superior oblique and superior rectus
- d) Levator palpebrae superioris & muller muscle

Correct Answer - D

Ans. is 'd' i.e., Levator palpebrae superioris & muller muscle

- The levator palpebrae superioris is the important upper eye lid retractor. Injury or weakness to this muscle leads to ptosis.
- This muscle is supplied by oculomotor (3') nerve.
- Deep part of the elevator muscle is the Muller's muscle, which is sympathetically innervated.
- In hyperthyroidism, sensitization of the Muller muscle leads to upper eyelid retraction and pseudoproptosis.
- On the other hand, in Horner's syndrome loss of this muscle action leads to ptosis.
- The capsulopalpebral fascia assists in lower eyelid retraction and coordinates with eyeball movement. It arises as an extension of the inferior rectus and inserts into the lower edge of the lower tarsus and the adjacent orbital septum.

1210. A patient with ptosis, upper 4 mm of cornea is covered by upper eyelid. Grade of Ptosis is ?

a) Mild

b) Moderat

c) Severe

d) Profound

Correct Answer - A

Ans. is 'a' i.e., Mild

- In unilateral cases of ptosis, difference between the vertical height of palpebral fissures of the two sides indicates the degree of ptosis.
- In bilateral cases it can be determined by measuring the amount of cornea covered by the upper eyelid and then subtracting 2 mm.
- Depending upon its amount the ptosis is graded as -
- 1:1 Mild : 2 mm
- Moderate : 3 mm
- Severe : 4 mm
- In this question, 4 mm of cornea is covered by upper eyelid. Subtracting 2 mm from this means there is 2 mm of ptosis, i.e. mild grade

1211. Hardoleum internum is ?

- a) Acute infection of Zeis gland
- b) Acute infection of Moll gland
- c) Acute infection Meibomian gland
- d) Chronic infection of Zeis gland

Correct Answer - C

. Ans. is 'c' i.e., Acute infection Meibomian gland

- Acute infection of Zeis (Moll) gland → Sty (Hardoleum externum).
- Acute infection of tarsal gland (Meibomian gland) → Hardoleum internum o Chronic infection of tarsal gland (Meihonium gland) → Chalazion

Differences between sty (Hordeolum externum), chalazion and Hordeolum internum

	Stye (Hordeolum externum)	Chalazion	Hordeolum internum
Onset	Acute	Chronic	Acute
Gland	Zeis's gland	Meibomian gland	Meibomian gland
Types of inflammation	Suppurative	Lipogranulomatous	Suppurative
Symptoms	Acute pain and swelling	Painless disfigurement	Severe pain
Signs	Localized, hard and tender swelling near the lid margin	Hard nontender swelling away from lid margin	Yellow point seen on everting the lid
Treatment	Hot fomentation, Antibiotics	Drainage by incision	Incision and drainage

and removal of eye lash	and curettage Intralesional steroid Diathermy, antibiotic	Antibiotics and analgesic

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1212. Congenital dacryocystitis, the block is at?

a) Lacrimal canaliculi

b) Nasolacrimal duct

c) Punctum

d) None

Correct Answer - B

Ans. is 'b' i.e., Nasolacrimal duct

Congenital dacryocystitis (Dacryocystitis neonatorum)

- It is the inflammation of lacrimal sac in the newborn. It is due to congenital blockage of nasolacrimal duct. Congenital dacryocystitis usually presents as a mild grade chronic inflammation. It is characterized by :?
 1. Epiphora develops after seven days of birth followed by mucopurulent discharge.
 2. Regurgitation of mucopurulent discharge on pressure over the sac area, i.e., positive regurgitation test
 3. Swelling over the sac area
- Treatment includes :?
 1. Massage over lacrimal sac with topical antibiotics:- Cures obstruction in about 90% of infants spontaneous recanalization of obstructed nasolacrimal duct can occur upto 9 months.
 2. Lacrimal syringing:- Syringing with normal saline and antibiotic solution is performed if the condition is not cured up to the age of 9-12 months.
 3. Probing of nasolacrimal duct:- It is performed if the condition is not cured by 1-12 months
 4. Intubation with silicon tube

5. Dacryocystorhinostomy:- It is performed if the child is brought very late or above described procedures fail.

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1213. Dacryocystorhinostomy involves?

- a) Opening up the terminal blocked end of nasolacrimal duct
- b) Connecting the lacrimal sac to nose by breaking the medial wall
- c) Complete excision of lacrimal
- d) Insertion of drainage tube in the lacrimal sac

Correct Answer - B

Ans. is 'b' i.e., Connecting the lacrimal sac to nose by breaking the medial wall

- Dacryocystorhinostomy is the surgical procedure which involves removal of bone adjacent to lacrimal sac (medial wall) and incorporating the lacrimal sac with lateral nasal mucosa (at middle meatus) in order to bypass the obstruction in nasolacrimal duct.
- Advantage of dacryocystorhinostomy over dacryocystectomy is that there is no epiphora or watering of eyes postoperatively.
- Indications of dacryocystorhinostomy are :-
 1. Congenital or acquired nasolacrimal duct obstruction.
 2. Functional obstruction to lacrimal outflow (e.g. lacrimal pump weakness) or facial nerve palsy.
 3. History of dacryocystitis
- Dacryocystorhinostomy can be done either open (external) approach or endonasal (endoscopic) approach.

1214. Dacrocystorhinostomy, where the duct is opened?

- a) Superior meatus
- b) Inferior meatus
- c) Middle meatus
- d) Sphenoethmoidal recess

Correct Answer - C

Ans. is 'None > c' i.e., Middle meatus

- CMV retinitis is the most common ophthalmic manifestation of CMV, occurring as a congenital infection in infants or an opportunistic infection in the immunocompromised host.
- Adults commonly affected include those individuals with acquired immunodeficiency syndrome (AIDS), oncology patients, and patients on immunosuppressive therapy.
- There is characteristic hemorrhagic, full thickness retinitis.
- In early stage there are yellow-white exudates (areas of retinal necrosis) associated with areas of vasculitis and retinal hemorrhage.
- There may be exudative retinal detachment and ultimately, there occurs total retinal atrophy.
- There are three distinct variants of CMV retinitis :?
 1. Classical (fulminant) retinitis
- It is necrotic retinitis
- Large areas of retinal hemorrhage along a whitened, edematous or necrotic retina, usually in posterior pole in the distribution of nerve fiber layer along the vascular arcades.
- It is also known as "Pizza-Pic retinopathy" or "cottage cheese with catchup".
 2. Granular (indolent) retinitis

- Without edema, hemorrhage or vascular sheathing, progressing along active border of retinal periphery.
- 3. Perivascular retinitis
- Frosted branch angitis with retinal perivasculitis.
- .. Another finding in CMV retinitis is a white granular geographic lesion that clears centrally as it enlarges, leaving a quiet central area of retinal atrophy and mottled pigment epithelium. This has also been described as "brush-fire" pattern.
- 2. It should be remembered that vitreous hemorrhage, though, is not common in CMV retinitis, it may occur after initiation of treatment of AIDS (HAART).
- 3. In routine course there is no vitreous hemorrhage or vitritis due to immunocompromised state of these patients. But, once the treatment of AIDS is started, their immune status may improve, and capable of producing inflammation. Which may cause vitritis and vitreous hemorrhage.

1215. Surgery of choice for chronic acquired dacryocystitis

- a) Dacryocystorhinostomy
- b) Dacryocystectomy
- c) Conjunctivo-cystorhinostomy
- d) None

Correct Answer - A

Ans. is 'a' i.e., Dacryocystorhinostomy

Treatment of chronic dacryocystitis

Congenital

Adult (acquired)

- Massage over lacrimal sac with antibiotic eye drops
- **Conservative** :- Massage, antibiotic drops, probing,
- **Syringing** (irrigation) with normal saline & syringing
- antibiotic solution
- **Dacryocystorhinostomy** (DCR) :- Surgery of choice
- **Probing** of nasolacrimal duct
- Dactyocystectomy (DCT)
- Intubation with silicone tube
- Conjunctivocystorhinostom
- Dacryocystorhinostomy (DCR)

1216. Copper deposition in cornea leads to?

a) Keratoconus

b) Keratoglobus

c) KF ring

d) Siderosis

Correct Answer - C

Ans. is 'c' i.e., KF ring

Retention of Foreign bodies

- The retention of a foreign body adds considerably to the danger of a penetrating injury.
- The foreign bodies most likely to penetrate and be retained in the eye are minute chips of iron or steel (accounting for 90% of the foreign bodies in industry), stone, and particles of glass, lead pellets, copper percussion caps and less frequently, spicules of wood.
- In chipping stone with an iron chisel, it is commonly a chip of the chisel and not of the stone which enters the eye.
- Chalcosis is perforating injury to eye with metal containing copper (Cu). Copper deposition can lead to :?
 - .. Grayish-green/golden brown discoloration of peripheral cornea called Kayser-Fleisher ring.
 - 2. Sunflower (Petal of flower) cataract due to deposition of copper under the posterior capsule of the lens.
 - 3. Golden plaque at posterior pole of the retina.
- Siderosis is caused by an iron foreign body. Iron deposition can cause :?
 - .. Characteristic and earliest manifestation is rusty deposits of iron in a ring shaped manner on anterior surface of capsule of the lens. Later cataract develops.

2. Initially iris is stained greenish and later become reddish-brown ---> Heterochromia iridis.
3. Pigmentary degeneration of retina.
4. Secondary open angle glaucoma.

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1217.

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Commotio retinae affects which part of retina

-

a) Posterior pole

b) Peripheral retina

c) Inferior-nasal part

d) Superior-nasal part

Correct Answer - A

Ans. is 'a' i.e., Posterior pole

- Berlin's oedema, also called commotio retinae, occurs in blunt trauma to eye.
- It manifests as milky white cloudiness involving a considerable area of the posterior pole with a 'cherry-red' spot in the foveal region.
- It may disappear after some days or may be followed by pigmentary changes.

1218. Retrobulbar injection is given in

- a) Inside muscle cone
- b) Outside muscle cone
- c) Subtenon space
- d) Subperiosteum

Correct Answer - A

Ans. is 'a' i.e., Inside muscle cone

- Retrobulbar injection :- Injection in retrobulbar space inside the muscle cone.
- Peribulbar injection :- Injection in peribulbar/retrobulbar space outside the muscle cone.
- Sub-Tenon injection :- Injection beneath the tenon capule, i.e. in subtenon space. It is also called parabolbar block.

1219. All are ophthalmological emergencies except ?

a) CRAO

b) CRVO

c) Acute congestive glaucoma

d) Endophthalmitis

Correct Answer - B

Ans. is 'b' i.e., CRVO

Ocular emergencies include those conditions that result in acute, severe pain in association with sudden vision loss, or that may lead to vision loss if left untreated; and traumatic conditions that affect globe or adnexa.

- Common ophthalmic emergencies are :-
 1. Acute congestive glaucoma
 2. Ulcerative or traumatic corneal diseases
 3. Hyphema
 4. Acute blindness
 5. Eyelid or conjunctival laceration
 6. Anterior lens subluxation
 7. Ruptured globe
 8. Optic neuritis
 9. Endophthalmitis
 10. Orbital cellulitis
 11. Central retinal arterial occlusion (CRAG)
 12. Retinal detachment

1220. Treatment of congenital ptosis with poor elevation is

a) Levator resection

b) Frontalis sling

c) FS operation

d) None of the

Correct Answer - B

Ans. is 'b' i.e., Frontalis sling

Surgeries for ptosis

- Depending upon the LPS action, three main types of techniques are available.
- 1. If levator action is good :- LPS is shortened, i.e., resection of LPS. The operations are Blaskovics operation, Everbusch operation and Fasanella - servat operation. Fasanella - servat operation is indicated in Homer syndrome.
- 2. If LPS is paralysed Superior rectus muscle is used to lift the lid. The operation is called Mott's operation.
- 3. If both LPS and superior rectus are paralysed Frontalis sling/suspension operation (Hess's operation) is done. It is indicated in Marcus Gunn jaw winking syndrome, blepharophimosis syndrome, total 3rd nerve palsy, Aberrant regeneration of V^d nerve.

1221. Enucleation of the eyeball is contraindicated in ?

- a) Endophthalmitis
- b) Panophthalmitis
- c) Intraocular tumours
- d) Painful blind eye

Correct Answer - B

Ans. is 'b' i.e., Panophthalmitis

Enucleation

- Enucleation is the removal of eyeball with a portion of optic nerve from the orbit while preserving all other orbital structures.
- Indications
 - Absolute :- Retinoblastoma, malignant melanoma.
 - Relative :- Painful blind eye, mutilating ocular injury, anterior staphyloma, phthisis bulbi, endophthalmitis, congenital anophthalmia or severe microphthalmia.
- Contraindications
 - Enucleation is contraindicated :-
 - After the onset of sympathetic ophthalmia
 - Panophthalmitis :- Infection can spread via the cut ends of optic nerve sheath causing meningitis

1222. Parachute lesions are seen in ?

a) Eale's disease

b) Diabetes

c) Sick cell anemia

d) All of the above

Correct Answer - D

Ans. is d i.e., All of the above

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1223. Type of laser used for iridotomy ?

a) Excimer

b) Krypton red

c) Nd:YAG

d) Diode

Correct Answer - C
Ans. is 'c' i.e., Nd:YAG

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1224. Specific for albinism

a) Red reflex

b) Decreased visual activity

c) Photophobia

d) Nystagmus

Correct Answer - A

Ans. is 'a' i.e., Red reflex

- All the given options are seen in albinism. But, red reflex is specific.
- Ocular features in albinism -
 - a Red reflex
 - Pink or blue iris
 - Dazzling glare
 - Photophobia
 - Decreased vision
 - Nystagmus
 - Clear retinal and choroidal vessels, separated by glistening white space
 - Strabismus (mild to moderate)

1225. Epithelial xerosis of conjunctiva is caused by ?

a) Trachoma

b) Diphtheria

c) Xerophthalmia

d) Pemphigus

Correct Answer - C

Ans. is 'c' i.e., Xerophthalmia

Xerosis of conjunctiva

- refers to a condition where the conjunctiva becomes dry and lusterless. Depending upon the etiology, conjunctival xerosis can be divided into two groups : ?

Parenchymatous xerosis : - It occurs following cicatricial disorganization of conjunctiva due to local causes which can be : ?

1. Trachoma
2. Diphtheric membranous conjunctivitis
3. Stevens - Johnson syndrome
4. Pemphigus
5. Thermal, chemical or radiational burn
6. Lagophthalmos due to symblepharon.

Epithelial xerosis : - It occurs due to vitamin 'A' deficiency (Xerophthalmia).

1226. All nerve are involved in superior orbital fissuresyndrome except ?

a) 1^t

b) 3rd

c) 4th

d) 6th

Correct Answer - A

Ans. is 'a' i.e., 1st

Superior orbital fissure syndrome

- The superior orbital fissure is a cleft between the lesser and greater wing of sphenoid.
- The structures passed through superior orbital fissure are 3rd, 4th, 6th nerve, ophthalmic division of 5th nerve, superior & inferior division of ophthalmic vein and sympathetic fibres.
- Therefore symptoms of superior orbital fissure syndrome are same as in cavernous sinus thrombosis, i.e., painful ophthalmoplegia :-
- Pain (retro-orbital pain) and sensory disturbances in the V₁ (ophthalmic division of 5th nerve) distribution
- Ipsilateral ophthalmoplegia (3rd, 4th and 6th nerve involvement).

1227. Contraindication of LASIK ?

a) >20 years

b) Keratoconus

c) Normal cornea

d) Myopia of - 8D

Correct Answer - B

Ans. is 'b' i.e., Keratoconus

Patient selection criteria for LASIK

- Patients above 20 years of age
- Stable refraction for at least 12 months
- Motivated patients
- Myopia upto -12D
- Absence of corneal pathology
- Corneal thickness > 500

Contraindications of LASIK

- Monocular patient
- Infections eg conjunctivitis,
- Glaucoma
- Autoimmune disease
- Thin cornea (< 450 micron
- Keratoconus
- Poor endothelial cell count in cornea (< 1500)
- Dry eye
- Diabetic retinopathy

Yoke Muscles

Right superior rectus Left inferior oblique

Movement

Dextro-elevation

Left superior rectus Right inferior oblique

Levo-elevation

Right inferior rectus Left superior oblique

Dextro-depression

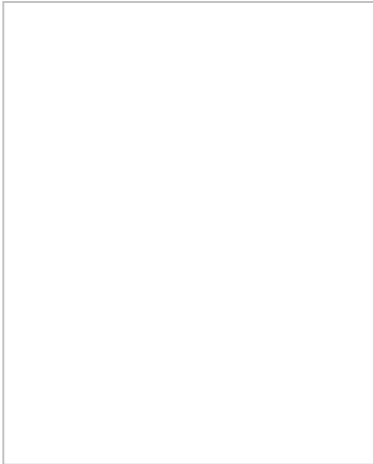
Left inferior rectus Right superior oblique

Levodepression Right lateral rectus left medial rectus

Dextroversion

Levoversion

Left lateral rectus Right medial rectus



Yoke Muscles

Right superior rectus Left
inferior oblique

Left superior rectus Right
inferior oblique

Right inferior rectus Left
superior oblique

Left inferior rectus Right
superior oblique

Right lateral rectus left medial rectus

Left lateral rectus Right medial rectus

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1228. Corneal ulcer resembling fungal ulcer is seen in infection with which of the agents?

- a) Nocardia asteroides
- b) Mycobacterium
- c) Klebsiella pneumoniae
- d) Chlamydia trachomatis

Correct Answer - A

Ans: A. Nocardia asteroides

(Ref: Yanoff & Duker 4le p219; Smolin and Thoft's The Cornea 4le p248)

- Keratitis caused by Nocardia asteroides, which is a filamentous bacteria, closely resembles the morphology of corneal ulcers caused by fungi.
- Corneal infections with Nocardia, Actinomyces, and Streptomyces typically follow an indolent clinical course, which may simulate mycotic keratitis with hyphal edges, satellite lesions, and elevated epithelial lesions.
- The ulcer is characteristically superficial, with a wreath-shaped gray-white infiltrate and an undermined necrotic edge.
- The base might assume a cracked windshield appearance.
- Nocardia keratitis often resembles fungal infection, with a filamentous appearing border and satellite lesions. Infection appears to be indolent; the anterior chamber reaction is often minimal.
- However, rarely, more severe anterior chamber reaction and hypopyon seen.

1229. This patient came to the casualty with palpitations. His ECG has been shown below. What is your diagnosis?

a) Ventricular tachycardia

b) A-V dissociation

c) Supraventricular tachycardia

d) Sinus tachycardia

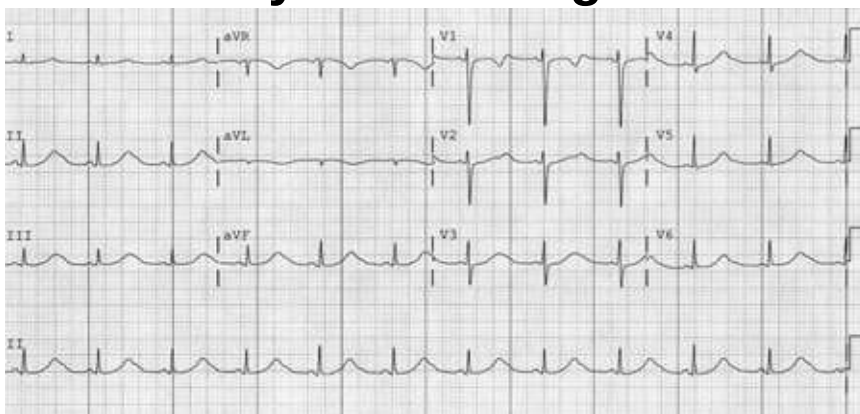
Correct Answer - C

Answer- C. Supraventricular tachycardia

The overall rhythm is rapid and regular. The R-R interval is almost exactly 1.5 large boxes in duration - establishing the rate at 180-190 beats per min this is an ECG showing narrow complex tachycardia most probably due to AVNRT (Av Nodal Reentrant Tachycardia) aka supraventricular tachycardia.

[Ref Harrison's 18th/e p.1888]

1230. Diagnose the Underlying Medical disorder by ECG change in Photograph



- a) Hypokalemia
- b) Hyperkalemia
- c) Hypercalcemia
- d) Hypocalcemia

Correct Answer - D

Ans is D Hypocalcemia

Image shows Prolonged Q-T interval

Long QT syndrome (LQTS) is a rare congenital and inherited or acquired heart condition in which delayed repolarization of the heart following a heartbeat increases the risk of episodes of *torsades de pointes* (TdP, a form of irregular heartbeat that originates from the ventricles). These episodes may lead to fainting and sudden death due to ventricular fibrillation. Episodes may be provoked by various stimuli, depending on the subtype of the condition

1231. What is Reifenstein syndrome?

- a) Associated with gonadal dysgenesis
- b) Partial androgen insensitivity syndrome due to receptor mutation
- c) Associated with mental retardation
- d) 5-alpha reductase deficiency associated with perineo-scrotal hypospadias

Correct Answer - B

Answer- B. Partial androgen insensitivity syndrome due to receptor mutation

It is partial androgen insensitivity syndrome because of less severe androgen receptor mutation.

Patients often present in infancy with :

1. Perineoscrotal hypospadias and small undescended testes.
2. Gynecomastia at the time of puberty.
3. Those individuals raised as males require hypospadias repair in childhood and breast reduction in adolescence.
4. Supplemental testosterone rarely enhances androgenization significantly, as endogenous testosterone is already increased.

1232. Nelson's syndrome is most likely seen after:

a) Hypophysectomy

b) Adrenalectomy

c) Thyroidectomy

d) Orchidectomy

Correct Answer - B

The answer is B (Adrenalectomy):

Adrenalectomy predisposes to the development of Nelson's syndrome.

Nelson syndrome

- Nelson syndrome is a disorder characterized by the rapid enlargement of a preexisting ACTH pituitary adenoma after adrenalectomy.
- *This syndrome occurs because the following adrenalectomy, the suppressive effect of cortisol on ACTH secretion and tumor growth is removed resulting in increased ACTH secretion and tumor growth.*
- Patients with Nelson's syndrome present with hyperpigmentation and with the manifestation of an expanding intrasellar mass lesion (visual field defects, headache, cavernous sinus invasion, etc.)
- These tumors represent one of the most aggressive and rapidly growing of all pituitary tumors.
- ACTH levels are markedly elevated.
- Preoperative Radiotherapy may be indicated to prevent the development of Nelson's syndrome after adrenalectomy.

1233. Dent's disease is characterized by all except

- a) Chloride channel defect
- b) Males are affected
- c) Nephrolithiasis
- d) Defect in limb of Loop of Henle

Correct Answer - D

Answer- D. Defect in limb of Loop of Henle

- Dent's disease refers to heterogenous group of X-linked disorders.
- It is characterized by manifestations of proximal tubule dysfunction (PT) dysfunction associated with hypercalciuria nephrolithiasis, nephrocalcinosis and progressive renal failure
- These features are found in males only.
- mutation in gene encoding CLS-S, a Voltage gated Chloride channel.

1234. Following are absolute indication for hemo-dialysis except

a) GI bleeding

b) Convulsions

c) Pericarditis

d) Hyperkalemia of 6.5 mEq/L

Correct Answer - D

Answer- D. Hyperkalemia of 6.5 mEq/L

Important indications for hemodialysis are:

1. Severe metabolic acidosis when sodium bicarbonate cannot be used (due to risk of fluid overload).
2. Severe hyperkalemia
3. Drug poisoning like lithium & aspirin
4. Uremia (Uremic pericarditis, encephalopathy or GI bleeding).

1235. In scleroderma features are all except:

a) Decrease in tone of LES

b) Restrictive cardiomyopathy

c) Syndactyly

d) Halitosis

Correct Answer - C

Answer- C. Syndactyly

Syndactyly is not associated with scleroderma.

Lower esophageal sphincter tone is decreased in scleroderma.

Scleroderma can cause restrictive cardiomyopathy.

Halitosis (bad smell in breath) can occur in scleroderma.

1236. 40 year old male patient presents to the Emergency department with central chest pain for 2 hours. The ECG shows ST segment depression and cardiac troponins are elevated. Patient has a positive history of previous PCI 3 months back. He is administered Aspirin, Clopidogrel, Nitrates and LMWH, in the Emergency Department and shifted to the coronary care unit. The best recommended course of further action should include.

- a) Immediate Revascularization with Thrombolytics
- b) Early Revascularization with PCI
- c) Continue conservative management and monitoring of cardiac enzymes and ECG
- d) Continue conservative management and plan for delayed Revascularization procedure after patient is discharged

Correct Answer - B

Answer is B (Early Revascularization with PCI)

The patient presenting as a case of NSTEMI to the emergency department.

The presence of elevated cardiac troponins and history of previous PCI place the patient into a high 'risk category'.

*The Patient in question is th **10** a 'high risk' patient with NSTEMI
Such patients are candidates for early invasive management with
PCI/CABG.*

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1237. The most common translocation seen in patients with Multiple Myeloma is

a) t(11;14)

b) t(4;14)

c) t(14;16)

d) t(14;20)

Correct Answer - A

Answer is A (t(11;14))

The most common translocation seen in patients with Multiple Myeloma is 01;14).

`The most common translocation seen in patients with Multiple Myeloma is t(11;14)(q13;q32) involving the BCL1 locus on chromosome 11q13 and the immunoglobulin heavy (IgH) chain locus on chromosome 14q13 which leads to overexpression of Cyclin D1 ' - The Washington Manual of Surgical Pathology

`The two most common translocation seen in patients with Multiple Myeloma are t(11;14) and t(4; 14). Both these translocations occur with almost similar frequencies, however the incidence of translocation 1(11; 14) appears to be marginally higher. Patients with t(4; 14) fall within a poor prognosis subgroup, while those with 1(11; 14) have a standard risk' - The Principles of Clinical Cytogenetics

The two most common translocation seen in patients with Multiple Myeloma

- t(11;14)(q13;q32) : Associated with standard prognosis
- t(4;14) (p16;q32) : Associated with aggressive behaviour and poor prognosis
- *The most common translocation in multiple myeloma associated*

with a poor prognosis is translocation $t(4;14)$

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1238. Best for management of respiratory alkalosis?

a) Rebreathing in paper bag

b) IPPV

c) Normal saline

d) Acetazolamide

Correct Answer - A

Answer- A. Rebreathing in paper bag

Changing ventilator setting may be used to prevent or treat respiratory alkalosis in persons who are being mechanically ventilated. Persons with hyperventilation syndrome may benefit from reassurance, rebreathing from a paper bag during symptomatic attacks, and attention to the psychological stress.

1239. Adrenal reserve is best tested by means of infusion with

a) Glucocorticoids

b) ACTH

c) GnRH

d) Metyrapone

Correct Answer - B

Answer- B. ACTH

Glucocorticosteroid reserve can be evaluated by the ACTH stimulation test

A more sensitive test of adrenal reserve is the standardised 24-hour ACTH infusion test. Under maximal ACTH stimulation the cortisol secretion increases tenfold. If glucocorticoid coverage is required during the ACTH stimulation test, dexamethasone can be used because it does not interfere with the laboratory values of endogenous glucocorticoids.

1240. DOC of GTCS in pregnancy

a) Lamotrigine

b) CBZ

c) Levetiracetam

d) Valproate

Correct Answer - A

Ans. is 'a' i.e., Lamotrigine

- Lamotrigine is often better tolerated and is less teratogenic than valproate.
- Lamotrigine has been increasingly prescribed in pregnancy over older antiepileptic drugs such as carbamazepine and sodium valproate.

1241. Blood transfusion should be completed within hours of initiation

a) 1- 4 hours

b) 3- 6 hours

c) 4- 8 hours

d) 8- 12 hours

Correct Answer - A

Ans. is 'a' i.e., 1-4 hours

- From starting the infusion (puncturing the blood with the infusion set) to completion, infusion pack should take a maximum of 4 hours.

1242. What is the of correction of sodium deficit

a) 0.5 mmol/hour

b) 1 mmol/hour

c) 1.5 mmol/hour

d) 2.0 mmol/hour

Correct Answer - A

Ans. is 'a' i.e., 0.5 mmol/Hr

- For serious symptomatic hyponatremia, the first line of treatment is prompt intravenous infusion of hypertonic saline, with a target increase of 6 mmol/L over 24 hours (not exceeding 12 mmol/L) and an additional 8 mmol/L during every 24 hours thereafter until the patient's serum sodium concentration reaches 130 mmol/L.

1243.

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Characteristic features of a lesion in the lateral part of the medulla include all except

- a) Ipsilateral Homer's syndrome
- b) Contralateral loss of proprioception to the body and limbs
- c) Nystagmus
- d) Dysphagia

Correct Answer - B

Ans. is 'b' i.e., Contralateral loss of proprioception to the body and limbs

- Damage to lateral part of medulla (lateral medullary syndrome or wallenberg syndrome) causes :?
 - 1) *Ipsilateral* : Facial sensory loss, facial pain, ataxia, nystagmus, homer syndrome.
 - 2) *Contralateral*
- Other features are nausea & vomitng, vertigo dysphagia and horseness.

1244. Most common cause of pleural effusion in AIDS patients

a) Kaposi sarcoma

b) TB

c) Pneumocystis Jiroveci

d) Mycoplasma

Correct Answer - A

Ans. is 'a' i.e., Kaposi sarcoma

Ophthalmological diseases

- The most common abnormal findings on fundoscopic examination are cotton wool spots.
- CMV retinitis is the most severe ocular complication and occurs when CD4 T-cells count is less than 50/ml. It typically presents as perivascular hemorrhage and exudate with Cottage-Cheese appearance.
- Acute retinal necrosis syndrome, also called progressive outer retinal necrosis (PORN) is caused by HSV and VZV
- Other manifestations are chorioretinitis by toxoplasma and P carinii, Kaposi sarcoma of eyelid, and lymphoma.

1245. Graham steel murmur is seen in

a) PS

b) PR

c) TR

d) TS

Correct Answer - B

Answer- B. PR

Graham steel's murmur

- A diastolic murmur audible along the left sternal border due to pulmonary regurgitation in patients with pulmonary hypertension.
- Graham steel murmur is a high pitched decrescendo murmur loudest during inspiration
- Graham steel's- Early DM- PR

1246. The most accurate investigation for assessing ventricular function is:

a) Multislice CT

b) Echocardiography

c) Nuclear scan

d) MRI

Correct Answer - B

B i.e. Echocardiography

Transthoracic echocardiography is the most commonly used cardiac imaging examination after the chest X-ray and probably approaches the electrocardiogram in its clinical utility. It is harmless and relatively comfortable for the patient and is the first-line technique for evaluating most abnormalities of the cardiac chambers, valves and great vessels.

Diagnostic utility	Chest X-ray	Transthoracic echocardiogram	Transesophageal echocardiogram	Nuclear medicine technique	Multislice CT

Anatomy

Myocardium	+	++	+++	+	++
Valves	+	++	+++	0	+
Coronaries	0	0	+	0	++
Pericardium	+	+	+	0	++
Pulmonary vessels	+++	0	0	0	+++
Calcification	+++	+	+	0	+++

Function

Myocardium	++	++	+++	++	+

Valves	+	++	+++	0	+
Coronaries	0	0	+	++	++
Limitations					
Radiation hazard	-	0	0	- -	
Risk/discomfort	0	0	- -	-	-
Spatial resolution	- -		-		
Temporal resolution		-	-		
Operator skill	-		- - -		-
Cost				--	
+++ = Major utility; ++ = moderate utility, + = minor utility; 0 = no utility/no limitations; - = minor limitation-- - = moderate limitation; - - - major limitation					

1247. CVP is monitored in A/E

a) Anterior jugular vein

b) Internal jugular vein

c) External jugular vein

d) Inferior venacava

Correct Answer - D

Answer- D. Inferior venacava

Commonly used vein cannulation sites for central venous access include:

- Jugular vein
- External jugular vein
- Internal jugular vein (central, posterior, anterior approaches)
- Subclavian vein (supraclavicular, infraclavicular, axillary approaches)
- Femoral vein
- Basilic vein

1248. Central venous monitoring is done for all except

- a) Regulating the speed and amount of fluid infusion
- b) Administering thrombolytics
- c) Deciding the need for plasma infusion
- d) Deciding the requirement for blood transfusion

Correct Answer - B

Answer- B. Administering thrombolytics

- 1) Administration of noxious medications
- 2) Hemodynamic monitoring-
- Blood transfusion or plasma transfusion
- 3) Plasmapheresis, apheresis, hemodialysis, or continuous renal replacement therapy
- 4) Poor peripheral venous access

1249. Thrombosis is most commonly associated with what site in CVP

a) Internal jugular vein

b) Subclavian vein

c) Femoral vein

d) External jugular vein

Correct Answer - C

Answer- C. Femoral vein

Advantages-

- Rapid access with high success rate
- Does not interfere with CPR
- Does not interfere with intubation
- No risk of pneumothorax
- Trendelenburg position not necessary during insertion

Disadvantages-

- Delayed circulation of drugs during CPR Prevents patient mobilization
- Difficult to keep site sterile
- Difficult for PA catheter insertion
- Increased risk of iliofemoral thrombosis

1250. Serum ascitic fluid gradient of 1.5 (SAAG) with ascitic fluid protein of 2.8gm/dl. the most likely cause is

a) Nephritic syndrome

b) Cardiac failure

c) TB

d) Portal hypertension

Correct Answer - B

Answer- B. Cardiac failure

Serum to ascites albumin gradient >1.5 suggests either cirrhosis or cardiac failure.

The total protein concentration >2.5 suggests ascites due to cardiac cause

The total protein concentration helps to differentiate uncomplicated ascites from cirrhosis from cardiac ascites both of which have a SAAG 1.1 g/dL .

1251. Coronary steal phenomenon caused due to

- a) Arterial dilation
- b) Coronary microvessel dilation
- c) Epicardial vessel dilation
- d) Capacitance vessel dilation

Correct Answer - B

Answer- B. Coronary microvessel dilation

Coronary steal is the term given to blood being stolen from one region of the coronary tree by another.

It is also called coronary steal syndrome.

It is commonly seen with powerful coronary dilator drugs like dipyridamole or hydralazine.

These drugs are potent arteriolar dilators and dilates resistance vessels too.

The obstructed branch has significant arteriolar dilation even when oxygen demand is low because of the accumulation of metabolites in the ischemic tissue.

1252. Decreased CVP is seen in

a) Pneumothorax

b) PEEP

c) Bacterial sepsis

d) Heart failure

Correct Answer - C

Answer- C. Bacterial sepsis

Decreased

- Hypovolemia
- Septic shock
- Deep inhalation (transient)
- Increased venous compliance

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1253. Best to monitor intraoperative myocardial ischemia (infarction) is

- a) ECG
- b) CVP monitoring
- c) Transesophageal echocardiography
- d) Invasive intracarotid arterial pressure

Correct Answer - C

C i.e. Transesophageal echocardiography

Transoesophageal echocardiography provides a real time picture of all 4 cardiac chambers and valves. It can identify any malfunctioning valves in addition to any wall motion abnormalities related to myocardial ischemia. It is very useful during anesthesia. Abnormal motion of ventricular wall detected in this way is a reliable index of myocardial ischemia and may guide drug therapy, can identify if therapy has successfully treated the ischemia or indicate the need for further surgical revascularization

CVP (catheter in central vein) measures right sided filling pressure whereas pulmonary artery catheter measures/monitors left heart filling pressure.

Arterial cannulation measures direct systemic arterial pressure and facilitate sampling of arterial blood for analysis.

1254. Lemierre's syndrome is

- a) Carotid sinus aneurysm
- b) Thrombophlebitis of IJV
- c) Traumatic occlusion of IJV
- d) Any of the above

Correct Answer - B

Answer- B. Thrombophlebitis of IJV

Rare thrombophlebitis of the jugular veins with distant metastatic sepsis in the setting of initial oropharyngeal infections (pharyngitis, t/-peritonsillar abscess).

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1255. Wide QRS duration is -

a) > 0.8sec

b) > 0.9 sec

c) > .12 sec

d) None

Correct Answer - C

Answer- C. > .12 sec

QRS duration → 0.08 - 0.12 sec.

QT interval

0.40 sec.

PR interval

0.12 - 20 sec.

QRS Axis range → + 90 to -30°

1256. Absent P Wave is seen in:

a) Atrial Fibrillation

b) Cor-pulmonale

c) Mitral Stenosis

d) COPD

Correct Answer - A

Answer is A (Atrial Fibrillation)

P wave is typically absent in Atrial Fibrillation. COPD and Cor-Pulmonale are associated with tall p waves from Right Atrial Enlargement (P-Pulmonale) while Mitral Stenosis is typically associated with a wide and notched p wave from Left Atrial Enlargement (P-Mitrale)

Causes of Absent Wave:

- Atrial fibrillation (p' wave is absent or replaced by fibrillary T wave)
- Atrial flutter (p' wave is replaced by flutter wave, which shows saw-tooth appearance).
- SA block or sinus arrest
- Nodal rhythm (usually abnormal, small p wave).
- Ventricular ectopic and ventricular tachycardia.
- Supraventricular tachycardia (p' wave is hidden within QRS, due to tachycardia).
- Hyperkalemia.
- Idioventricular rhythm

Right Atrial Enlargement(RAE) is typically associated with tall P waves

P Pulmonale

(COPD and Cor-Pulmonale are associated with tall p waves from RAE)

Left Atrial enlargement(LAE) is typically

associated with wide P waves

P Mitrale

(Mitral Stenosis is typically associated with a wide and notched p wave from LAE)

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1257. Torsades de pointes is seen in all except

a) Hyponatremia

b) Hypocalcemia

c) Hypomagnesemia

d) Hypokalemia

Correct Answer - A

Answer- A. Hyponatremia

HypokalemiaQ

HypocalcemiaQ

Hypomagnesemia

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1258. Sinus bradycardia with MI treatment

a) Atropine

b) Digoxin

c) Calcium channel blocker

d) Propranolol

Correct Answer - A

Answer- A. Atropine

The SA node rate generally increases after the administration of a vagolytic drug, such as "atropine".

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1259. ECG image,U wave seen, patient is on furosemide & beta blocker. Diagnosis

a) Hypocalcemia

b) Hypokalemia

c) Hyperkalemia

d) Hypercalcemia

Correct Answer - B

Ans. is 'b' i.e., Hypokalemia

E.C.G. manifestations of electrolyte disorders

Hyperkalemia

- A tall peaked and symmetrical T-waves is the first change seen on ECG in patients with hyperkalemia. o RR interval lengthens and QRS duration increases.
- Flattening or disappearance of P wave.
- ST elevation.
- Widening of the QRS complexes due to a severe conduction delay and may become 'sine wave'.
- The progression and the severity of the E. C. G change do not correlate well with the serum potassium concentration.

Hypokalemia

- Similar to hyperkalemia, hypokalemia produce changes on the E. C. G which are not necessarily related to serum potassium level.
- Depression of the ST segment
- Decrease in amplitude of T waves
- Increase in amplitude of U waves
- U and T wave merge in some cases to form a T-U wave which may be misdiagnosed as prolonged QT interval.
- P wave can become larger and wider and PR interval prolong

slightly.

- QRS duration may increase when hypokalemia becomes more severe.

Hypocalcemia

- Prolongation of the QT interval
- *Due to prolongation of the phase 2 of the ventricular action potential and lengthening of the ST segment while the T wave (which correlate with time for repolarisation remains unaltered).*

Hypercalcemia

- Shortening of the QT interval
- *(Primarily due to a decrease in phase 2 of the ventricular action potential and resultant decrease in ST segment duration).*

Hypothermia

- Causes slow impulse conduction through all cardiac tissues resulting in :?

Prolongation of all the ECG intervals

- RR
- PR
- QRS'
- QT
- *There is also "elevation of the J point" (Only if the ST segment is unaltered producing characteristics T or Osborne wave.)*

1260. In COPD which is true

a) $FEV_1 / FVC < 0.7$

b) FEV_1 / FVC

c) RV4

d) TLV1

Correct Answer - A

Answer- A. $FEV_1 / FVC < 0.7$

Spirometry findings in COPD includes reduced FEV_1 and a reduced FEV_1 / FVC ratio. Diffusion capacity for carbon monoxide reflects the ability of lung to transfer gas across alveolar/capillary interface. Diffusion capacity is low in patients with emphysema and infiltrative lung diseases. It is increased in patients with pulmonary hemorrhage, congestive heart failure and asthma.

1261. Which of the following is markedly decreased in restrictive lung disease

a) FVC

b) FEV₁

c) FEV₁ /FVC

d) RV

Correct Answer - A

Answer- A. FVC

Forced vital capacity (FVC)- Decreased (more than obstruction)

Forced expiratory volume in 1 second (FEV₁)- Decreased in proportion to FVC

FEV₁/FVC- Near normal or increased

Forced mid expiratory flow rate- Reduced

Total lung capacity- Decreased

Residual volume- Generally decreased

Functional residual capacity- Decreased

1262. Cepacia syndrome fulminant illness seen in

- a) Sarcoidosis
- b) Cystic fibrosis
- c) Tuberculosis
- d) Immotile cilia syndrome

Correct Answer - B

Answer- B. Cystic fibrosis

Capacea syndrome is a rapid clinical deterioration in patients with cystic fibrosis due to new acquisition of or chronic colonization with *Burkholderia cepacia* complex and carries a very high mortality. In chronically colonized patients the deterioration is often triggered by an intercurrent illness.

1263. Most important feature to diagnose severe pneumonia-

a) Cyanosis

b) Chest indrawing

c) Nasal flaring

d) Fast breathing

Correct Answer - B

Ans. is 'b' i.e., Chest indrawing

o The only sign for severe pneumonia is chest indrawing.

1264. The most definitive method of diagnosing pulmonary embolism is :

- a) Pulmonary arteriography
- b) Radioisotope perfusion pulmonary scintigraphy
- c) EKG
- d) Venography

Correct Answer - A

Answer is A (Pulmonary arteriography):

'Selective pulmonary angiography is the most specific examination available for establishing the definitive diagnosis of PE.' - Harrison 16th/1563

Most definitive investigation : Pulmonary angiography is an invasive procedure, and it is the most definitive procedure. It is however certainly not the initial investigation of choice.

The initial investigation of choice in a case of suspected pulmonary embolism is either a lung ventilation perfusion scan or a CT of the chest with intravenous contrast.

'CT scanning of the chest with intravenous contrast is the principal imaging test for diagnosis of PE.' - Harrison *'Lung scanning (V/Q scan) is now a second line diagnostic test for PE'*

Most definitive / specific test for PE ^Q

Best

initial imaging test for diagnosis of PE^o

Pulmonary angiography ^Q

CT scan

with intravenous contrast ^Q (Preferred choice, against a lung V-Q scan)

1265. Empyema thoracis is most commonly caused by which organism

a) Streptococcus pneumoniae

b) Pseudomonas

c) Mycoplasma

d) Staphylococcus aureus

Correct Answer - A

Answer- A. Streptococcus pneumoniae

Empyema thoracis is commonly caused by those bacteria that cause pneumonias such as streptococcus pneumoniae and staphylococcus aureus. E.coli, Influenza, Klebsiella pneumoniae.

1266. Most common cause of lobar consolidation

a) Mycoplasma

b) Chlamydia

c) Streptococcus

d) Legionella

Correct Answer - C

Answer- C. Streptococcus

Lobar pneumonias typically occurs with primary pneumonias caused by virulent agents, most commonly pneumococci.

1267. Clinical feature of Bronchiectasis are all except

a) Hemoptysis

b) Night sweats

c) Chest pain

d) Productive cough

Correct Answer - B

Answer- B. Night sweats

The classic clinical manifestations of bronchiectasis are cough and the daily production of mucopurulent and tenacious sputum lasting months to years.

complaints include dyspnea, wheezing hemoptysis, and pleuritic chest pain.

1268. All of the following are features of interstitial lung disease except

- a) Exertional dyspnea
- b) Early productive cough
- c) Digital clubbing
- d) Coarse crepitation during clubbing

Correct Answer - B

Answer- B. Early productive cough

Cough is usually nonproductive, a productive cough is unusual

- Hemoptysis
- Wheezing
- Chest pain
- Clubbing can occur with interstitial lung disease.

1269. Chest X-ray shows B/L lung infiltrates next investigation is

a) Sputum examination

b) CT

c) Bronchoscopy

d) Antibiotics

Correct Answer - B

Answer- B. CT

Presence of B/L lung infiltrates suggests interstitial lung disease. High resolution computed tomography (HRCT) is obtained in almost all patients with diffuse pulmonary parenchymal disease.

1270. Best test for lung fibrosis

a) Chest x-ray

b) MRI

c) HRCT

d) Biopsy

Correct Answer - C

Ans. is 'c' i.e., HRCT

- Lung fibrosis is a diffuse parenchymal lung disease.
- Idiopathic pulmonary fibrosis is the most common form of idiopathic interstitial pneumonia.
- We have already discussed that best investigation for interstitial lung disease is HRCT

Estimated relative frequency of the interstitial lung disease

Diagnosis	Relative frequency, %
Idiopathic interstitial pneumonias	40
Idiopathic pulmonary fibrosis	55
Nonspecific interstitial pneumonia	25
Respiratory bronchiolitis-ILD and	15
Cryptogenic organizing pneumonia	3
Acute interstitial pneumonia	<1
Occupational and environmental	26
Sarcoidosis	10

Sarcoidosis	10
Connective tissue diseases	9
Drug and radiation	1
Pulmonary hemorrhage syndromes	<1
Other	13

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1271. Drug of choice in interstitial lung disease is

a) Antibiotics

b) Steroid

c) Bronchodilators

d) Aspirin

Correct Answer - B

Answer- B. Steroid

The usual initial treatment is "oral prednisolone".

For severe disease, - "Pulse methylprednisolone" is used.

1272. Last stage of acute asthma is

a) Hypocapnia

b) Hypercapnia

c) Hyperoxia

d) Alkalosis

Correct Answer - B

Answer- B. Hypercapnia

Late stages of Asthma are characterized by "hypercapnia".

In asthma patients with impending respiratory failure the CO_2 level exceeds 45 mmHg.

1273. AGN (acute glomerulonephritis) is diagnosed by

a) Hyaline cast

b) WBC cast

c) RBC cast

d) Granular cast

Correct Answer - C

Answer- C. RBC cast

Presence of RBC casts in urine is characteristic of nephritic syndrome due to glomerulonephritis.

1274. Cystatin C levels are used in urology for

- a) Detecting UTI
- b) Estimating GFR
- c) Estimating difference between CRF and ARF
- d) Screening of Renal Ca

Correct Answer - B

Answer- B. Estimating GFR

GFR estimations determined by creatinine based equations are not precise, so other substances such as "cystatin C" are being explored to estimate GFR.

1275. Which is not seen in distal RTA

a) Urine pH < 5.5

b) Hypokalemia

c) Hypercalciuria

d) Nephrolithiasis

Correct Answer - A

Answer- A. Urine pH < 5.5

Normal anion gap metabolic acidosis/acidemia

Hypokalemia

Urinary stone formation (related to alkaline urine, hypercalciuria, and low urinary citrate).

Nephrocalcinosis (deposition of calcium in the substance of the kidney)

Bone demineralisation (causing rickets in children and osteomalacia in adults)

1276. Which of the following is not a feature of distal renal tubular acidosis

a) Normal anion gap

b) Renal hypercalciuria

c) Alkaline urine

d) Hyperkalemia

Correct Answer - A

Answer- A. Normal anion gap

Normal anion gap metabolic acidosis/acidemia

Hypokalemia

Urinary stone formation (related to alkaline urine, hypercalciuria, and low urinary citrate).

Nephrocalcinosis (deposition of calcium in the substance of the kidney)

Bone demineralisation (causing rickets in children and osteomalacia in adults)

1277. Hyperkalemia aciduria is seen in

- a) Type I RTA
- b) Type II RTA
- c) Type IV RTA
- d) Sigmoidocolostomy

Correct Answer - C

Answer- C. Type IV RTA

Type 4 RTA is due either to a deficiency of Aldosterone or to a resistance to its effects.

It was included in the classification of renal tubular acidoses as it is associated with a mild (normal anion gap) metabolic acidosis (hyperchloremic acidosis) due to a physiological reduction in proximal tubular ammonium excretion (impaired ammoniogenesis), which is secondary to hypoaldosteronism, and results in a decrease in urine buffering capacity.

1278. A patient with diabetes, hyperkalemia, urinary pH < 5.5 Cause is

a) Uremia

b) Pseudohyperaldosteronism

c) Type I Renal tubular acidosis

d) Type IV RTA

Correct Answer - D

Answer- D. Type IV RTA

Hyperkalemia with urinary pH < 5.5 along with diabetes suggests type IV renal tubular acidosis.

1279. Calciphylaxis is a severe life threatening condition which occurs is

- a) Parathyroidectomy
- b) Medullary carcinoma thyroid
- c) Hyperthyroidism
- d) End stage Renal disease

Correct Answer - D

Answer- D. End stage Renal disease

Calciphylaxis is a rare and serious disorder characterized by systemic medial calcification of the arterioles that leads to ischemia and subcutaneous necrosis.

Calciphylaxis is one of several types of extra-osseous calcification (which also includes intimal, medial, and valvular calcification) that may occur in patients with end-stage renal disease (ESRD).

Calciphylaxis most common occurs in patients with ESRD who are on hemodialysis.

1280. The hallmark of henoch schonlein purpura is

a) Palpable purpura

b) Abdominal pain

c) Arthritis

d) Renal dysfunction

Correct Answer - A

Answer- A. Palpable purpura

Palpable purpura is essential for diagnosis.

- Diagnosis is confirmed by presence of palpable purpura with normal platelet count along with one or more of the following : abdominal pain, arthralgia/arthritis and mesangial deposition of IgA.

1281. Interstitial nephritis is common with

- a) NSAID
- b) Black water fever
- c) Rhabdomyolysis
- d) Tumor lysis syndrome

Correct Answer - A

Ans. is 'a' i.e., NSAID

DRUGS CAUSING INTERSTITIAL NEPHRITIS

Antibiotics	Diuretics	Anticonvulsants	Miscellaneous
β Lactams	Thiazide	Phenytoin	Captopril
Sulfonamides	Furosemide	Phenobarbitone	H_2 receptor blockers
Quinolones	Triamterene	Carbamazepine	Omeprazole
Vancomycin	NSAIDS	Valproic acid	Mesalazine
Erythromycin			Indinavir
Minocycline			Allopurinol
Rifampicin			
Ethambutol			
Acyclovir			

1282. Renal artery stenosis may occur in all of the following, except :

a) Atherosclerosis

b) Fibromuscular dysplasia

c) Takayasu's arteritis

d) Polyarteritis nodosa

Correct Answer - D

Answer is D (Polyarteritis nodosa)

Amongst the options provided renal artery stenosis is least likely to be seen in association with Polyarteritis nodosa.

Atherosclerosis and Fibromuscular disease

- Renal artery stenosis is produced predominantly by atherosclerotic occlusive disease (80% to 90% of patients) or fibromuscular dysplasia (10-15% of patients).- *CMDT'06 p 460*
- the common cause of renal artery stenosis *in the middle aged and elderly* is an atheromatous plaque at origin of renal artery. *Harrison*
- *In younger women* stenosis is due to intrinsic structural abnormalities of the arterial wall caused by a heterogeneous group of lesions called 'fibromuscular dysplasia'. - *Harrison 16th /1707*

PAN or Takayasu arteritis ?

CMDT do not mention PAN or Takayasu arteritis as a cause for renal artery stenosis.

However, Takayasu arteritis is certainly a more common cause of renal artery stenosis than PAN.

Takayasu arteritis (Aorto-arteritis) is believed to be the most common of renovascular hypertension in India and China. –

Diseases of Kidney and Urinary Tract 8th/1279

A number of research publications, however show Takayasu arteritis

as a cause for renal artery stenosis.

PAN

Although renal involvement is seen in upto 60% of patients with PAN its pathology does not involve renal artery stenosis.

The pathology involves arteritis without glomerulonephritis and is characterised by aneurysms of small and medium sized arteries. Stenosis of main renal artery is an unusual association'.

Causes of Renal artery stenosis :

1. Atherosclerosis
2. Fibromuscular dysplasia
3. Non specific Aorto arteritis
4. Takayasu arteritis and giant cell arteritis (Takayasu > Giant cell)
5. Antiphospholipid syndrome
6. Transplant renal artery stenosis
7. Renal artery embolism
8. Dissecting aneurysm of aorta
9. Radiation arteritis

1283. A:G maintained in

a) Nephritic syndrome

b) Cirrhosis

c) Protein losing enteropathy

d) Multiple myeloma

Correct Answer - A

Answer- A. Nephritic syndrome

Decreased albumin/Globulin ratio is seen :

- Multiple myeloma or metastatic disease
- AIDS
- Renal disease
- Liver disease (cirrhosis)
- Intestinal disease (Protein losing enteropathy)
- Cachexic patient
- CHF
- A/G ratio is decreased in nephrotic syndrome.

1284. Which is not a stroke

a) TIA

b) Hemiplegia

c) SAH

d) Intracerebral hemorrhage

Correct Answer - A

Answer- A. TIA

Stroke occurs when poor blood flow to brain results in death of brain cells.

Stroke is of two types :-

1. Ischemic stroke: It is the most common type and occurs due to thrombosis of cerebral blood vessels.
2. Hemorrhagic stroke: It occurs due to hemorrhage either in brain tissue (Intracerebral hemorrhage) or in subarachnoid space (subarachnoid hemorrhage).

Symptoms of stroke are :-

1. Sudden onset of hemiparesis / hemiplegia

1285. Most common location of hypertensive intracranial hemorrhage is:

AI 06; NIMHANS 08; DNB 10; WB 11

a) Subarachnoid space

b) Basal ganglia

c) Cerebellum

d) Brainstem

Correct Answer - B

Ans. Basal ganglia

The most common sites for hypertensive intracranial hemorrhage are:

- ? Basal ganglia (putamen, thalamus and adjacent deep white matter)
- ? Deep cerebellum
- ? Pons

So among the options provided basal ganglia is the single best answer of choice.

Ref: Harrison's Principles of Internal Medicine, 16th Edition, Pages 2390-92.

1286. The features of Cushing triad are all except

a) Bradycardia

b) Hypotension

c) Irregular breathing

d) Hypertension

Correct Answer - D

Answer- D. Hypertension

Cushing's triad is a sign of increased intracranial pressure.

It is the triad of : - Hypertension, Bradycardia and Irregular breathing

1287. Alice in wonderland syndrome occurs in

a) SSPE

b) Epilepsy

c) Cerebral hemorrhage

d) Multiple sclerosis

Correct Answer - B:C

Answer- (B) Epilepsy & (C) Cerebral hemorrhage

Infectious : CMV, EBV (IMN), Influenza A encephalitis, coxsackie B1 encephalitis, scarlet fever, typhoid encephalopathy, VZV encephalitis.

CNS lesions :- Acute disseminated encephalomyelitis, cavernous angioma, cerebral arteriosclerosis, brain tumor, cerebral hemorrhage.

Paroxysmal neurological disorders : Epilepsy (temporal lobe epilepsy), migraine1

1288. The common cause of subarachnoid hemorrhage is:

a) Arterio-venous malformation

b) Cavernous angioma

c) Aneurysm

d) Hypertension

Correct Answer - C

Answer is C (Aneurysm):

'The most common cause of subarachnoid haemorrhage is rupture of a saccular aneurysm (excluding head trauma)' – Harrison.

Previously asked frequently as follows: (Excluding head trauma)

Most common cause of subarachnoid haemorrhage is rupture of a saccular aneurysmQ

Most common cause of subarachnoid haemorrhage is rupture of a Berry aneurysmQ

Most common cause of subarachnoid haemorrhage is rupture of 'Circle of Willis' aneurysmQ.

(Saccular aneurysms are synonymous with Berry Aneurysms and most commonly occur in the anterior circulation on the Circle of Willis).

1289. Isolated painful third nerve palsy is a feature of aneurysms of:

- a) Posterior communicating artery
- b) Anterior communicating artery
- c) Vertebrobasillary artery
- d) Ophthalmic artery

Correct Answer - A

Ans. Posterior communicating artery

The most common of all intracranial aneurysms, **posterior communicating artery** aneurysms present with ipsilateral **third nerve palsy** (thus dilating the pupil)

Isolated cranial nerve palsy frequently involves the third cranial nerve due to its anatomic surroundings when leaving the brainstem. (PCOM) is the most common type of aneurysm to form in the basal cistern. The majority of symptomatic aneurysms of the PCOM present as an oculomotor nerve palsy (ONP), which can develop directly via mass effect of the growing aneurysm or indirectly via rupture of the aneurysm

1290. Water shed infarct in brain

- a) Occurs in the proximal portion of main arteries
- b) Occurs in the central portion of main arteries
- c) Occurs in the terminal portion of main arteries
- d) Any of the above

Correct Answer - C

Answer- C. Occurs in the terminal portion of main arteries

Border zone or watershed infarcts are ischemic lesion that occurs in characteristic location at the junction between two main arterial territories.

Watershed strokes are named that way because they affect the watershed areas of the brain.

These areas are thin strips of brain which are sandwiched in between the farthest end branches of two adjacent vascular territories.

1291. In Wilsons disease copper deposition occurs in

a) Pons

b) Medulla

c) Cerebellum

d) Basal ganglia

Correct Answer - D

Answer- D. Basal ganglia

In brain, the toxic injury primarily affects the basal ganglia particularly the putamen which demonstrates atrophy and cavitation.

1292. Impotence is a feature of which of the following :

a) Multiple sclerosis

b) Poliomyelitis

c) Amyotrophic lateral sclerosis

d) Meningitis

Correct Answer - A

Answer is A (Multiple sclerosis):

Multiple sclerosis is associated with erectile dysfunction or impotence.

Neurological disorders associated with Erectile dysfunction include:

- Spinal cord injury
- Multiple sclerosis
- Peripheral neuropathy

1293. All of the following are features of Obstructive jaundice except:
September 2007

- a) Normal alkaline phosphatase
- b) Mildly elevated serum aminotransferases level
- c) Clay colour stools
- d) Pruritis

Correct Answer - A

Ans. A: Normal alkaline phosphatase

Obstruction to the flow of bile in common bile duct may result from choledocholithiasis, malignancy of head of pancreas, bile ducts or ampulla of Vater.

Charcot's triad of intermittent fever, pain and jaundice is characteristic of ascending cholangitis and indicates biliary obstruction.

Hepatomegaly is present in most cases of obstructive jaundice and is due to congestion and stretching out of intrahepatic biliary spaces. A palpable gall bladder usually indicates obstruction of the distal CBD, due to other causes like underlying malignancy, than stone (Courvoisier's law).

Hepatic bile flow suppression leads to jaundice accompanied by dark urine (bilirubinuria) and light coloured (alcoholic) stools.

Bile salts and pigments in urine and absent urobilinogen also favour the diagnosis of obstructive jaundice.

Serum albumin and prothrombin time are good indicators of liver function derangement. Serum bilirubin levels indicate severity of jaundice and high direct bilirubin rules out hemolytic jaundice.

Mild elevation of SGPT levels are also seen in obstructive jaundice

And elevation of GGT levels are also seen in obstructive jaundice consistent with liver dysfunction. An elevated alkaline phosphatase is, always present in obstructive jaundice.

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1294. Abdominojugular reflex appears after compressing abdomen for

a) 5 sec

b) 10 sec

c) 15 sec

d) 30 sec

Correct Answer - C

Answer- C. 15 sec

This is done by applying firm pressure with the palm of the hand to the right upper quadrant of the abdomen for 10-15 seconds with the patients breathing quietly while the jugular vein is observed.

A positive abdominojugular reflux sign is defined by an increase in the jugular venous pressure of greater than 3 cm, sustained for greater than 15 seconds.

1295. Extraintestinal manifestations of Inflammatory bowel disease include all of the following, Except:

a) Uveitis

b) Sclerosing cholangitis

c) Osteoarthritis

d) Skin nodules

Correct Answer - C

Answer is C (Osteoarthritis):

Osteoarthritis is not an extraintestinal manifestation of inflammatory bowel disease

Uveitis, Sclerosing Cholangitis, and skin nodules (Erythema nodosum) are all recognized extraintestinal manifestations of inflammatory bowel disease.

1296. Genitourinary complication of ulcerative colitis

a) Cystitis

b) Pyelonephritis

c) Urinary calculi

d) Urethritis

Correct Answer - C

Answer- C. Urinary calculi

Urinary calculi (oxalate stones in ileal disease), local extension of Crohn disease involving ureter or bladder, amyloidosis, drug-related nephrotoxicity.

1297. Liver biopsy indication is all except

- a) Amoebic hepatitis
- b) Wilson's disease
- c) Chronic hepatitis B and C
- d) Autoimmune hepatitis

Correct Answer - A

Answer- A. Amoebic hepatitis

Grading and staging of chronic hepatitis B and C

Diagnosis of :

- Hemochromatosis (quantitative estimation of hepatic iron)
- Wilson's disease (quantitative hepatic copper)
- Focal liver lesions

Evaluation of :

- Cholestatic liver disease : Primary biliary cirrhosis, primary sclerosing cholangitis
- Abnormal liver biochemical tests in a patient with a negative or inconclusive serologic work-up
- Treatment efficacy
- Side effects of treatment regimens (such as methotrexate for rheumatoid arthritis)
- Post liver transplant by protocol or for evaluation of abnormal liver biochemical tests
- Donor liver
- Fever of unknown origin

1298. Use of spironolactone in liver cirrhosis is

- a) Decrease edema
- b) Improves liver function
- c) Decrease afterload
- d) Decrease intravascular volume

Correct Answer - A

Answer- A. Decrease edema

Treatment of ascites in patient with cirrhosis is aimed at the underlying cause of the hepatic disease and at the sodium water retention

Diuretic therapy typically consists of treatment with spironolactone and furosemide in a ratio of 100: 40 mg/day with doses titrated upward as needed (upto 400 mg spironolactone and furosemide in a ratio of 100 : 40 mg/day).

1299. Pea soup diarrhea is seen in -

a) Cholera

b) Typhoid

c) Yersinosis

d) Hepatitis

Correct Answer - B

Answer- B. Typhoid

Pea Soup diarrhoea is characteristic of salmonella infection.

About 2 weeks after infection with salmonella typhi most people suffering from typhoid develop a yellow green foul liquid stool that resembles pea soup in appearance i.e., pea soup stool.

1300. Cause of vasodilatation in spider nevi -

a) Estrogen

b) Testosterone

c) Hepatot oxins

d) FSH

Correct Answer - A

Estrogen [Ref: Harrison 17th/e p. 1920; Robbin's 7th/e p. 882]

- Spider nevi refer to dilated, visible small blood vessels in the skin. - It is called spider nevi because it consists of central "feeding" blood vessel with numerous fine radiating legs emanating from the central body.
- Spider nevi are caused due to vasodilatation of vessels and are usually associated with cirrhosis.
- Cirrhosis is associated with vasodilatation and hyperdynamic circulation.
- "The cause of vasodilatation in chrrhosis is uncertain but it is believed to be related to the increased level of estrogen in the both. Estrogen is a female sex hormone which is metabolized by liver. Thus in liver diseases its level tends to increase which is believe to cause vasodilatation, resulting in spider naevi."

1301. Most significant risk factor for development for gastric carcinoma is

a) Paneth cell metplasia

b) Pyloric metaplasia

c) Intestinal metaplasia

d) Ciliated metaplasia

Correct Answer - C

Answer- C. Intestinal metaplasia

A) Environmental factors

B) Host factors : Chronic gastritis (causing hypochlorhydria or intestinal metaplasia), partial gastrectomy, gastric adenoma, Barrett's esophagus, and Menetrier disease.

- Intestinal metaplasia is the most significant precursor lesion for Gastric cancer
- C) Genetic factors

1302. Adult male with chronic atrophic gastritis, growth on skirrows medium & rapid urease test positive. Diagnosis is

a) H pylori

b) H. influnzae

c) K pneumonia

d) V. Cholarae

Correct Answer - A

Answer- A. H pylori

All favor the diagnosis of H pylori infection.

1303. Seen in SIADH

- a) Generalized edema
- b) Ascites
- c) Normal BP
- d) Dry mucous membrane

Correct Answer - C

Answer- C. Normal BP

Hyponatremia (dilutional hyponatremia with Na^+ < 135 mmol/L)
Decreased plasma osmolality (<280 m osm/kg) with inappropriately increased urine osmolality > 150 m osm).
High urine sodium (over 20 meq/L)
Low blood urea nitrogen <10 mg/L
Hypouricemia (<4 mg/dL)
Clinical euvolemia

1304. A diabetic patient having sensory involvement, tingling, numbness, ankle swelling, no pain. Diagnosis is

- a) Charcots joint
- b) Gout
- c) Rheumatoid arthritis
- d) Ankylosing spondylitis

Correct Answer - A

Answer- A. Charcots joint

It is a progressive destructive arthritis associated with loss of pain sensation°, proprioception° or both, in addition normal muscular reflexes that modulate joint movements are decreased.

It is most commonly caused by diabetes mellitus.

[Ref Harrison 18th/e p. 2855, 2856; 17th/e p. 2180-2181]

1305. Patient having Cushing syndrome due to adrenal tumor. Drug to be given

a) Cortisol

b) Betamethasone

c) Ketoconazole

d) Fludrocortisones

Correct Answer - C

Answer- C. Ketoconazole

TREATMENT-

- Treatment of choice- removal of pituitary corticotrope tumour (transphenoidal approach)
- Pituitary irradiation
- Metyrapone and ketoconazole
- Adrenocortical carcinoma- mitotane

1306. Metabolic change in severe vomiting is

a) Metabolic alkalosis

b) Respiratory alkalosis

c) Metabolic acidosis

d) Hyperkalemia

Correct Answer - A

Answer- A. Metabolic alkalosis

Persistent gastric vomiting leads to

- Hyponatremia
- Hypokalemia
- Hypochloremia
- Alkalosis

1307. Treatment of hypercalcemia includes all except

a) Steroids

b) Bisphosphonates

c) Phosphate

d) Strontium

Correct Answer - D

Answer- D. Strontium

Treatment of acute hypercalcemia

- Hydration with saline
- Forced diuresis: Saline plus loop diuretics (furosemide)
- Bisphosphonates (pamidronate, zoledronate)
- Calcitonin
- Special therapies: Phosphate (oral), glucocorticoids, dialysis

1308. Myelodysplastic syndrome is common in which age group

a) 2-10yrs

b) 15-20yrs

c) 25-40 yrs

d) > 50yrs

Correct Answer - D

Answer- D. > 50yrs

Myelodysplastic syndrome occurs most commonly in older adults with median age at diagnosis in most cases of 65 years and a male preponderance. Onset of the disease earlier than age 50 is unusual.

1309. The best drug to lower prolactin level in a female with infertility is

a) Bromocriptine

b) GnRH

c) Testosterone

d) Corticosteroid

Correct Answer - A

Answer- A. Bromocriptine

The treatment of choice for prolactinoma is "bromocriptine".

Bromocriptine is a dopamine agonist which inhibits the secretion and synthesis of prolactin.

1310. Which of the following is not commonly seen in Polycythemia Vera

- a) Thrombosis
- b) Hyperuricemia
- c) Prone for acute leukemia
- d) Spontaneous severe infection

Correct Answer - D

Answer- D. Spontaneous severe infection

Clinical features-

- Hyperviscosity, hypovolaemia, hypermetabolism, erythrocytosis, thrombosis.
- Headache, vertigo, tinnitus, syncope or even coma, transient visual loss
- Splenomegaly, haematemesis and melena, bleeding.
- Pruritis & peptic ulceration (basophilia with histamine release)
- Hyperuricaemia- urate stones and gout

1311. Evans syndrome is

- a) Anemia and thrombocytopenia
- b) Pancytopenia
- c) Lymphopenia and anemia
- d) Thrombocytosis and lymphocytosis

Correct Answer - A

Answer- A. Anemia and thrombocytopenia

Evans syndrome (ES) refers to the combination of Coombs-positive warm autoimmune hemolytic anemia (AIHA) and immune thrombocytopenia (ITP), although, less commonly, some patients will also have autoimmune neutropenia (15 percent in one series).

1312. All are major complications of massive transfusion except

a) Hypokalemia

b) Hypothermia

c) Hypomagnesemia

d) Hypocalcemia

Correct Answer - A

Answer- A. Hypokalemia

Complications of Massive transfusion :-

- Coagulopathy
- Citrate toxicity
- Hypothermia
- Metabolic alkalosis
- Hyperkalemia
- Acute respiratory distress syndrome
- Coagulation factor depletion

1313. Megaloblastic anemia is seen in ?

- a) ileal resection
- b) Crohn's disease
- c) Intestinal lymphatic ectasia
- d) a and b

Correct Answer - D

Ans. is 'a' i.e., ileal resection 'b' i.e., Crohn's disease

Crohn's disease is a type of
ileitis.

Chronic pancreatitis is a malabsorption state.

"About 40% of patients with chronic pancreatitis have vitamin B12 malabsorption"

1314. Regarding MSUD which is not true

- a) Deficiency of branched chain amino acid enzymes
- b) Hyperaminoaciduria
- c) Asymptomatic
- d) FeCl₃ turns navyblue

Correct Answer - C

Answer- C. Asymptomatic

It is an inherited (autosomal recessive) disorder of branched chain amino acid i.e. - Valine, Leucine and Isoleucine.

Maple syrup urine disease (MSUD) is d/t defect in enzyme - α -keto acid dehydrogenase.

Diagnosis

- The keto acids may be detected by adding a few drops 2-4 din itrophenylhydrazine (DNPH) reagent which produces a yellow precipitate in positive test.
- Ferric chloride gives navy blue colour with the patients urine.

1315. Result of liquorice ingestion

a) Hyperkalemic alkalosis

b) Hypokalemic alkalosis

c) Hypokalemic acidosis

d) Hypermalemic acidosis

Correct Answer - B

Answer- B. Hypokalemic alkalosis

Liquorice (Licorice) ingestion causes apparent mineralocorticoid excess (pseudohyperaldosteronism) due to inhibition of enzyme 11-13-HSD.

This causes metabolic alkalosis, hypokalemia and volume overload.

1316. Most common carcinoma associated with RA

- a) Diffuse large B cell lymphoma
- b) Large granular lymphocytic leukemia
- c) Chronic lymphocytic leukemia
- d) None of the above

Correct Answer - B

Answer- B. Large granular lymphocytic leukemia

Lymphogranular proliferation may be present in patients with Rheumatoid arthritis and in minority it will proceed to "large granular lymphocytic leukemia" in Rheumatoid arthritis

1317. Which of the following drugs is useful in acute attack of gout ?

a) Furosemide

b) Sulfinpyrazone

c) Allopurinol

d) Piroxicam

Correct Answer - D

Ans. is 'd' i.e., Piroxicam

Drugs used in acute gout

- i) NSAIDs Drug of choice
- ii) Colchicine
- iii) Corticosteroids

1318. TTKG in hypokalemia is -

a) $< 3-4$

b) $> 6-7$

c) $> 9-10$

d) $> 10-15$

Correct Answer - A

Answer- A. $< 3-4$

- A normal TTK in normal subjects on normal diet is 8-9
- Without other disease, hypokalemia should produce a TTKG < 3

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1319. Systemic sclerosis shows all except

a) Acroosteolysis

b) Tufting

c) Calcinosis cutis

d) Digital ulcers

Correct Answer - B

Answer- B. Tufting

Skin involvement in systemic sclerosis

- Pruritus in the early stages
- Edema in the early stages
- Sclerodactyly
- Digital ulcers
- Pitting at the fingertips
- Telangiectasia
- Calcinosis cutis

1320. Tetany is seen in

a) Hypocalcemia

b) Hypercalcemia

c) Hypoparathyroidism

d) Hyperparathyroidism

Correct Answer - A

Answer- A. Hypocalcemia

Acute hypocalcemia directly increases peripheral neuromuscular irritability.

Tetany consists of repetitive high frequency discharges after a single stimulus.

Hyperexcitability of peripheral neurons is probably the most important pathophysiologic effect of hypocalcemia.

1321. In inflammatory myopathy, which group of muscles is not affected

a) Ocular

b) Facial

c) Proximal muscles of limb

d) Distal muscles of limb

Correct Answer - C

Answer- C. Proximal muscles of limb

Inflammatory myopathies represent the largest group of acquired and potentially treatable cause of skeletal muscle weakness.

They are classified into three major groups :

1. Polymyositis
 2. Dermatomyositis
 3. Inclusion body myositis
- These disorders present as progressive often symmetric muscle weakness.
 - The proximal muscles are involved predominantly, first of the lower limb or girdle followed by proximal muscles of upper limb.
 - Ocular muscles are spared.
 - Distal muscles of the limb are involved rarely.

1322. Features of tumor lysis syndrome are:

a) Hypocalcemia

b) Hypophosphatemia

c) Alkalosis

d) Hypokalemia

Correct Answer - A

Answer is A (Hypocalcemia):

Tumor Lysis syndrome is associated with Hypocalcemia.

Tumor Lysis Syndrome is also associated with Hyperphosphatemia, Hyperkalemia and Acidosis.

1323. POEMS Syndrome includes all, EXCEPT:

a) Polyneuropathy

b) Organomegaly

c) Endocrinopathy

d) Multiple sclerosis

Correct Answer - D

The features of this syndrome are **polyneuropathy, organomegaly, endocrinopathy, multiple myeloma, and skin changes (POEMS)**.

Patients usually have a severe, progressive sensorimotor polyneuropathy associated with sclerotic bone lesions from myeloma. Polyneuropathy occurs in ~1.4% of myelomas, but the POEMS syndrome is only a rare subset of that group.

Unlike typical myeloma, hepatomegaly and lymphadenopathy occur in about two-thirds of patients, and splenomegaly is seen in one-third.

Ref: Harrison's principle of internal medicine 17th edition, Chapter 106.

1324. Minamata disease is caused by toxicity of:

a) Arsenic

b) Antimony

c) Lead

d) Mercury

Correct Answer - D

A significant example of mercury exposure affecting public health occurred in Minamata, Japan, between 1932 and 1968, where a factory producing acetic acid discharged waste liquid into Minamata Bay.

The discharge included high concentrations of methylmercury. The bay was rich in fish and shellfish, providing the main livelihood for local residents and fishermen from other areas.

For many years, no one realised that the fish were contaminated with mercury, and that it was causing a strange disease in the local community and in other districts.

At least 50 000 people were affected to some extent and more than 2 000 cases of Minamata disease were certified.

Minamata disease peaked in the 1950s, with severe cases suffering brain damage, paralysis, incoherent speech and delirium.

Ref : <http://www.who.int/mediacentre/factsheets/fs361/en/index.html>

1325. Signs of Bartter's syndrome -

a) Hypokalemia

b) Hypernatremia

c) Hyperkalemia

d) Acidosis

Correct Answer - A

Answer- A. Hypokalemia

Inherited forms of hypochloremic metabolic alkalosis and hypokalemia without hypertension are due to genetic mutations of various ion transporters and channels of the thick ascending limb of Henle's loop (TAL) and distal convoluted tubule (DCT).

[Ref: Harrison's Principles of Internal Medicine, 18th Edition, Pages 2360, 61]

1326. Vitamin E causes

- a) Hemorrhagic stroke
- b) Cardiac failure
- c) Ataxia
- d) Megalablastic anemia

Correct Answer - C

Ans. is 'c' i.e., Ataxia

- *Vitamin E (tocopherol) is a fat-soluble vitamin with antioxidant properties; It protects cell membranes from oxidation and destruction.*
- *Vitamin E is found in a variety of food including oils, meat, eggs, and leafy vegetables.*
- *There are multiple forms and isomers of tocopherol and the related compounds, tocotrienols.*
- *The current evidence the primary bioactive form of Vitamin E is alfa-tocopherol.*
- *Serum vitamin E levels are strongly influenced by concentration of serum lipids, and do not accurately reflect tissue vitamin levels.*
- *Effective vitamin E levels are calculated as the ratio of serum alpha-tocopherol per gram total lipids.*
- *Absorption of dietary vitamin E requires effective pancreatic exocrine function and fat absorption, unless provided in a synthetic water-soluble form.*

Vitamin

- *Vitamin E deficiency is uncommon in humans except in special circumstances.*
- *This is due to the abundance of tocopherols in the diet.*

1327. Description of Waterhouse Friedrich syndrome

- a) Adrenal hemorrhage post malignancy
- b) Congenital adrenals deficiency
- c) Adrenal hemorrhage after meningococcal infection
- d) Adrenal hemorrhage after corticosteroid withdrawal

Correct Answer - C

Answer- C. Adrenal hemorrhage after meningococcal infection

Waterhouse Friderichsen syndrome or massive adrenal hemorrhage is an uncommon usually fatal consequence of overwhelming sepsis. It is most frequently seen as a result of "meningococcal infection".

1328. XDR-TB is defined as Resistance to:

a) INH plus rifampicin

b) Fluoroquinolones plus INH plus amikacin

c) Fluoroquinolones plus rifampicin plus kanamycin

d) Fluoroquinolones plus INH plus rifampicin plus amikacin

Correct Answer - D

Ans. is. 'd' i. e., Fluoroquinolones plus INH plus rifampicin plus amikacin

- *Extensive drug resistance TB (XDR - TB) is referred to resistance to rifampicin and isoniazid as well as to quinolone and at least one of the following second line drug kanamycin, capreomycin or amikacin. XDR - TB = resistance to INH, rifampicin, Quinolone, and capreomycin/kanamycin/ amikacin*

1329. In total parenteral nutrition, no need to measure daily

- a) Electrolyte
- b) Fluid intake and output
- c) LFT albumin
- d) Magnesium

Correct Answer - C

Answer- C. LFT albumin

Monitoring of parenteral nutrition daily :-

- Measurement of fluid intake and output
- Serum electrolyte
- Glucose
- Calcium
- Magnesium
- Phosphate

Monitor the following parameters weekly :-

- Aminotransferase
- Bilirubin
- Triglycerides

1330. Brown tumors are seen in:

a) Hyperparathyroidism

b) Pigmented villonodular synovitis

c) Osteomalacia

d) Neurofibromatosis

Correct Answer - A

Brown tumors are highly vascular lytic lesions of the skeleton seen in both primary and secondary hyperparathyroidism. They result from the accumulation of abundant fibrovascular tissue and osteoclast like giant cells.

Ref: Robbin's Basic Pathology, 7th Edition, Pages 1186, 1286; Orthopaedic Pathology By Vincent J. Vigorita, Bernard Ghelman, Douglas Mintz, 2007, Page 187.

1331. Drug of choice for kala-azar is

a) Antimonials

b) Amphotericin B

c) Quinine

d) Paromomycin

Correct Answer - A

Answer- A. Antimonials

First line : Pentavalent antimony (Sodium stibogluconate is the drug of choice), and amphotericin-B.

Alternatives : Paromomycin, pentamidine, miltefosine, sitamoquine

1332. Which drug is used in the treatment of Type I tyrosinemia?

a) Nitisinone

b) Alogliptin

c) Pemoline

d) Milrinone

Correct Answer - A

Ans. A. Nitisinone

[Ref Nelson 20th ed p. 641]

- A diet low in phenylalanine and tyrosine can slow but does not halt the progression of the condition.
- The treatment of choice is nitisinone, which inhibits tyrosine degradation at 4-HPPD. This treatment prevents acute hepatic and neurologic crises.
- Although nitisinone stops or greatly slows disease progression, some pretreatment liver damage is not reversible.

1333. DMD not seen is

a) Muscle pseudo hypertrophy

b) Weakness

c) Tenderness

d) Cardiomyopathy

Correct Answer - C

Answer- C. Tenderness

DMD, also called pseudohypertrophic muscular dystrophy, is the most common hereditary neuromuscular dystrophy. It is an X-linked recessive disorder.

It is caused by a mutation in gene responsible for producing dystrophin (a sarcolemmal protein).

There is progressive muscle weakness affecting proximal muscles of limbs.

Child walks clumsily, has difficulty in climbing stairs and the gait is waddling (Trendelenburg).

Scoliosis, epilepsy and mild mental retardation

1334. Most sensitive test for myasthenia gravis

- a) Edrophonium test
- b) Single fibre EMG
- c) Multiple fibre EMG
- d) Repetitive nerve stimulation

Correct Answer - B

Answer- B. Single fibre EMG

Diagnosis-

- Anti- AchR radioimmunoassay
- Electrophysiological testing
- Single- fibre electromyography (most sensitive)

1335. A 25 year old female presents with generalized restriction of eye movement in all direction, intermittent ptosis, proximal muscle weakness and fatigability. Which is the MOST useful test in making the diagnosis?

a) CPK

b) Edrophonium test

c) EMG

d) Muscle biopsy

Correct Answer - B

This patient is showing signs and symptoms of Myasthenia gravis. Edrophonium test is the most useful test in making a diagnosis of this condition because of the rapid onset and short duration of its effect. This test is considered to be positive if there is any improvement in the weakness of this patient after administration of edrophonium.

Other diagnostic tests used for diagnosing myasthenia gravis are:

- **Acetyl choline receptor antibodies:** Presence of this antibodies is virtually diagnostic of MG, but a negative test does not exclude the disease.
- **Rapid nerve stimulation test:** In this test electric shocks are delivered at a rate of 2 or 3 per second to the appropriate nerves, and action potentials are recorded from the muscles. In these patients there is a rapid reduction of >10–15% in the amplitude of the evoked responses.

Ref: Drachman D.B. (2012). Chapter 386. Myasthenia Gravis and Other Diseases of the Neuromuscular Junction. In D.L. Longo, A.S. Fauci, D.L. Kasper, S.L. Hauser, J.L. Jameson, J. Loscalzo (Eds), Harrison's Principles of Internal Medicine, 18e.

1336. Dyslipidemia associated with alcohol consumption

- a) Decreased HDL
- b) Increased HDL
- c) Decreased triglycerase
- d) Decreased lipoprotein

Correct Answer - B

Answer- B. Increased HDL

Serem HDL cholesterol increases by 4.0 mg/dl (.1mmol/L)

Serum apolipoprotein A.1 increase by 8.8 mg/dl

Serum Triglyceride increases by 5-4 mg mg/dl

1337. Migraine is due to

- a) Dilatation of cranial arteries
- b) Constriction of cranial arteries
- c) Cortical spreading depression
- d) Meningial inflammation

Correct Answer - C

Answer- C. Cortical spreading depression

Cortical spreading depression is a self propagating wave of neuronal and glial depolarization that spreads across the cerebral cortex.

The activation of trigeminal afferents by cortical spreading depression in turn causes inflammatory changes in the pain-sensitive meninges that generate the headache of migraine through central and peripheral reflex mechanisms.

1338. Balthazar scoring system is used for?

a) Acute Pancreatitis

b) Acute Appendicitis

c) Acute cholecystitis

d) Cholangitis

Correct Answer - A

Answer- A. Acute Pancreatitis

Balthazar score is used in the CT severity index (CTSI) for grading of acute pancreatitis which has two components.

Using imaging characteristics, Balthazar and associates have established the CT severity index. This index correlates CT findings with the patient's outcome

1) Grading of pancreatitis

- A: Normal pancreas → 0
- B: Enlargement of pancreas → 1
- C: Inflammatory changes → 2
- D: Ill-defined single fluid collection → 3
- E: Two or more ill-defined fluid collections → 4

2) Pancreatic necrosis

- None → 0
- 30% → 2
- > 30 - 50% → 4
- > 50% → 6

1339. Triage system used for

a) Burn

b) Earthquack

c) Polytrauma

d) Floods

Correct Answer - C

Answer- C. Polytrauma

The usual principle of first come, first treated", is not followed in mass emergencies.

Triage consists of rapidly classifying the injured and the likelihood of their survival with prompt medical intervention.

Higher priority is granted to victims whose immediate or long-term prognosis can be dramatically affected by simple intensive care.

1340. Ileal obstruction due to round worm obstruction treatment is

- a) Resection with end to end anastomosis
- b) Resection with side to side anastomosis
- c) Enterotomy, removal of worms and primary closure
- d) Diversion

Correct Answer - C

Answer- C. Enterotomy, removal of worms and primary closure

Diversion is the first step in case of colonic obstruction, followed by resection and anastomosis of affected segment and then closure of diversion colostomy at a later date.

Intestinal luminal obstruction such as due to Bezoars or fecoliths of worm intestations are dealt with by enterotomy and removal followed by primary closure.

1341. Surgery for perforation due to round worm is

- a) Resection with end to end anastomosis
- b) Resection with side to side anastomosis
- c) Primary closure
- d) Diversion

Correct Answer - A

Answer- A. Resection with end to end anastomosis

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1342. Which is a clean surgery

a) Hernia surgery

b) Gastric surgery

c) Cholecystectomy

d) Rectal surgery

Correct Answer - A

Answer- A. Hernia surgery

Clean Wound (Class I)

- Include those in which no infection is present; only skin microflora potentially contaminate the wound. No hollow viscus is entered. No inflammation
- Examples : Hernia repair, breast biopsy

1343. Best prognostic factor for head injury is :

a) Glasgow coma scale

b) Age

c) Mode of injury

d) CT

Correct Answer - A

Answer is A (Glasgow coma scale):

Amongst the option provided GCS is the single best answer of choice.

Determining the patient prognosis after TBI (Traumatic Brain Injury) is difficult and complex.

- Several independent variables have been identified that correlate with severity.
- *Most studies have indicated Glasgow Coma Scale in the field and at arrival at the emergency department as a highly predictive indicator of prognosis. Harrison 17th / 2601*
In severe head injury eye opening, the best motor response and verbal output have been found to be roughly predictive of outcome. There have been summarized using the Glasgow coma scale.

Coma score = E + M + V

- Patient scoring 3 or 4 have an 85% chance of dying or remaining vegetative.
- Patients scoring 11 or above have only a 5 — 10% chance of dying or remaining vegetative.
- Intermediate scores correlate with proportional chances of recovery.

Other Poor prognosis

indicators : Harrison

- Older age
- Increase ICP
- Hypoxia & Hypotension
- CT evidence of compression of cisterns / midline shift
- Delayed evacuation of large intracerebral hemorrhage
- Carrier status for apolipoprotein E-4 allele

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1344. The tensile strength of wound reaches that of tissue by ?

a) 6 weeks

b) 2 months

c) 4 months

d) None

Correct Answer - D

Ans. is 'None'

It never equals the tensile strength of unwounded skin.

Robbin's writes- "How long does it take for a skin wound to achieve its maximal strength? When sutures are removed from an incisional surgical wound, usually at the end of the first week, wound strength is approximately 10% that of unwounded skin. Wound strength increases rapidly over the next 4 weeks, slows down at approximately the third month after the original incision, and reaches a plateau at about 70% to 80% of the tensile strength of unwounded skin."

1345. Steroid is injurious to wound when given

a) On 1st day

b) < 2weeks

c) 2-4 weeks

d) > 4 weeks

Correct Answer - B

Answer- B. < 2weeks

Steroids used after first 3 to 4 days post injury do not affect wound healing as severely as when used in immediate post operative period. Delay in use of such drugs for about 2 weeks post injury appears to lesser the wound healing impairment.

1346. In surgical patient malnutrition is best assessed by

- a) Serum albumin
- b) Hb level
- c) Mid arm circumference
- d) Tricipes skin fold thickness

Correct Answer - A

Answer- A. Serum albumin

Serum albumin is classic method to predict postoperative complications, hospital length of stay, morbidity and mortality and might to be associate to nurtitional status and disease severity.

1347. The commando operation is -

- a) Abdomino-perineal resection of the rectum for carcinoma
- b) Disarticulation of the hip for gas gangrene of the leg
- c) Extended radical mastectomy
- d) Excision of carcinoma of the tongue, the floor of the mouth, part of the jaw and lymph nodes enbloc

Correct Answer - D

Ans. is 'd' i.e., Excision of carcinoma of the tongue, the floor of the mouth, part of the jaw and lymph nodes enbloc

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1348. Dacron vascular graft is a:

a) Textile biologic

b) Textile synthetic

c) Nontextile biologic

d) Nontextile synthetic

Correct Answer - B

Dacron graft is a type of textile synthetic graft. It is associated with increased risk of thrombosis due to low flow rates.

They are pre coated with collagen, which eliminates the need for pre-clotting.

It is now reserved for aortic and high pressure, large diameter bypass grafts or used as aortic endografts.

Ref: Diabetic Foot: Lower Extremity Arterial Disease and Limb Salvage, Anton N. Sidawy, 2006 Edition, Chapter 22, Page 234; Mastery of Vascular and Endovascular Surgery By Gerald B. Zelenock, 2006 Edition, Chapter 50, Page 414; Vascular Access: Principles and Practice By Samuel Eric Wilson, 5th Edition, Page 115; Vascular Surgery By Alun H. Davies, Page 135.

1349. Abbes flap is used for

a) Eyelid

b) Tongue

c) Lip

d) Ear

Correct Answer - C

Answer- C. Lip

Abbe flap, also called lip switch flap, is used for lip reconstruction.

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1350. In LAHSHAL terminology for cleft lip & cleft palate, LAHSHAL denotes

a) Bilateral cleft palate only

b) Bilateral cleft lip only

c) Bilateral cleft lip & palate

d) No cleft

Correct Answer - C

Answer- C. Bilateral cleft lip & palate

LAHSHAL classification of cleft lip and palate was proposed by Kreins 0.

It is a diagrammatic classification of cleft lip & palate. According to this classification, mouth is divided into six parts.

LAHSHAL code indicates complete cleft with and incomplete cleft with small letter.

1351. Post operative abscess treatment of choice

a) Hydration

b) IV antibiotics

c) Image guided aspiration

d) Reexploration

Correct Answer - C

Answer- C. Image guided aspiration

The diagnosis and treatment of intraabdominal abscesses have improved with the advent of imaging techniques such as ultrasonography and CT. These advances have made minimally invasive drainage techniques available; such techniques complement traditional surgical drainage for patients with abdominal abscess cavities.

1352. May thurner or cockett syndrome involves

- a) Common iliac artery obstruction
- b) Internal iliac artery obstruction
- c) Internal iliac vein obstruction
- d) Left iliac vein compression

Correct Answer - D

Answer- D. Left iliac vein compression

May-Thurner syndrome/cockett syndrome/iliocaval/iliac vein compression syndrome. Occurs due to compression of left iliac vein by overriding right iliac artery. It results in left iliofemoral deep vein thrombosis.

1353. Method of reduction of inguinal hernia

a) Kugel manœuvre

b) Taxis

c) Macvay procedure

d) Stopa's technique

Correct Answer - B

Answer- B. Taxis

Taxis (hernia reduction) was the treatment of choice for incarcerated hernia.

Manual reduction of hernia is known as taxis. Taxis is an archaic term used to describe an attempt at reduction of a hernia that is acutely irreducible (incarcerated).

1354. Complication of total parenteral nutrition include ?

a) Hyperglycemia

b) Hyperkalemia

c) Hyperosmolar dehydration

d) a and b

Correct Answer - D

Ans. is 'a' i.e. Hyperglycemia, 'b' i.e. Hyperkalemia

Metabolic complication

- Azotemia
- Essential fatty acid def.
- Fluid overload
- Metabolic bone ds.
- Liver dysfunction
- Glucose imbalance (Hyperglycemia, hypoglycemia)
- Trace elements & vitamin deficiency
- Electrolyte abnormalities
 - n Hyponatremia, hyponatremia
 - n Hyperkalemia, hypokalemia
 - a Hyperphosphatemia, hypophosphatemia
 - n Hypermagnesemia, hypomagnesemia
 - n Hypercalcemia, hypocalcemia
 - n High serum zinc, low serum zinc
 - n High serum copper, low serum copper

1355. Subclavian steal syndrome is

- a) Reversal of blood flow in the ipsilateral vertebral artery
- b) Reversal of blood flow in the contralateral carotid artery
- c) Reversal of blood flow in the contralateral vertebral artery
- d) B/L reversal of blood flow in vertebral arteries

Correct Answer - A

Answer- A. Reversal of blood flow in the ipsilateral vertebral artery

- Subclavian steal syndrome may occur if the first part of the subclavian artery is occluded. Arm exercise causes syncope because of reversed flow, in the vertebral artery leading to cerebral ischemia.
- It can be treated by angioplasty or surgery and is rare.
- That is the result of an ipsilateral hemodynamically significant lesion of the proximal subclavian artery.

1356. Most common cause of acquired AV fistula is

- a) Bacterial infection
- b) Fungal infection
- c) Blunt trauma
- d) Penetrating trauma

Correct Answer - D

Answer- D. Penetrating trauma

"Penetrating injuries are the most common cause, but fistulas are sometimes seen after blunt trauma" – CSDT

1357. The procedure of choice for the evaluation of aortic aneurysm is -

a) Ultrasonography

b) Computed tomography

c) Magnetic resonance imaging

d) Arteriography

Correct Answer - B

Ans. is 'b' i.e. Computed tomography

- *"CT is the most precise test for imaging aortic aneurysm" - Sabiston*
- *'As a preoperative scanning tool, CT scan is the gold standard. Angiography has largely been replaced by contrast CT scanning" - Schwartz*

1358. Best approach in thoracic trauma is

- a) Midline sternotomy
- b) Parasternal thoracotomy
- c) Anterolateral thoracotomy
- d) Posterolateral thoracotomy

Correct Answer - C

Answer- C. Anterolateral thoracotomy

left' anterolateral thoracotomy is the best initial operative approach for unstable patients requiring resuscitation or when the location of the intrathoracic injury is unclear.

1359. Venous air embolism is most common in which position in surgery

a) Sitting

b) Prone

c) Lateral

d) Lithotomy

Correct Answer - A

Answer- A. Sitting

Venous air embolism is a potential hazard whenever the operative site is above the level of patients heart.

The 'sitting' position and its modification "beach chair" positions are associated with a greater incidence of venous air embolism

1360. Surgery in varicose veins is NOT attempted in presence of -

- a) Deep vein thrombosis
- b) Multiple incompetent perforators
- c) Varicose veins with leg ulcer
- d) All of the above

Correct Answer - A

Ans. is 'a' i.e., Deep vein thrombosis

Deep vein thrombosis is a contraindication for varicose veins.

Varicose vein surgery should never be attempted in a case where deep vein thrombosis exists along with varicose veins, because in these cases superficial veins are the only valved venous pathway and excising them will only aggravate the condition.

1361. Fatal exsanguinations occurs mostly in

- a) Closed fracture of femur shaft
- b) Open fracture of femur & tibia
- c) Partial transaction of artery
- d) Complete resection transaction of artery

Correct Answer - C

Answer- C. Partial transaction of artery

"Bleeding is more often exsanguinating after sharp injury and partial vessel transection".

1362. The treatment of choice for squamous cell anal cancer?

- a) Laser fulgaration
- b) Chemoradiotherapy
- c) Abdominoperennial resection
- d) Platinum-based chemotherapy

Correct Answer - B

Squamous cell anal cancer is rare but associated with Human papilloma virus infection (HPV), Anal intra-epithelial neoplasia (AIN) and immunosuppression.

The current treatment of anal canal carcinoma is chemoradiotherapy (combined modality therapy).

Chemotherapy include a combination of 5-FU with mitomycin C or Cisplatin.

Ref: Bailey and Love Short Practice of Surgery, 25th Edition, Page 1269; The MD Anderson Manual of Medical Oncology, 2nd Edition, Chapter 22.

1363. Premalignant lesion for carcinoma rectum is

a) Familial polyposis

b) FAP

c) Juvenile polyp

d) Adenomatous polyp

Correct Answer - A

Answer- A. Familial polyposis

Pre cancerous lesions for CA rectum

1. Villous papilloma
2. Adenomas
3. Familial polyposis

1364. Most common site for anal fissure is

a) 3 O'clock

b) 6 O'clock

c) 2 O'clock

d) 10 O'clock

Correct Answer - B

Answer- B. 6 O'clock

The vast majority of anal fissures occur in posterior midline.

Fissure in Ano (or Anal fissure)

- Most common site is → mid-line posteriorly
- MC symptom is -4 pain associated with defecation
- Fissure starts proximally at the dentate line

1365. Prepyloric or channel ulcer in the stomach is termed as -

a) type 1

b) type 2

c) type 3

d) type 4

Correct Answer - C

Ans. is 'c' i.e., Type 3

. *Situated in prepyloric region*

. *Associated with gastric acid hypersecretion*

1366. Alvarado score consist of

a) Leucopenia

b) Anorexia

c) Diarrhea

d) Periumbilical pain

Correct Answer - B

Answer- B. Anorexia

The most widely used is the Alvarado score. A score of 7 or more is strongly predictive of acute appendicitis.

Alvarado score

Symptoms

Migration of pain

Score

1

Anorexia

1

Nausea & vomiting

1

Signs

Tenderness in the right lower quadrant

2

Rebound tenderness

1

Elevated temperature

1

Laboratory

Leucocytosis

2

A shift of white blood cell count to the left

1

Total

10

1367. Most common age for intussusception is

a) 0-6 Months

b) 6 Months -3yrs

c) 3-5 Yrs

d) > 5 yrs

Correct Answer - B

Answer- B. 6 Months -3yrs

Intussusception is the telescoping of one portion of the intestine into the other.

It is the most common cause of intestinal obstruction in early childhood (3 months to 6 years)

1368. Retrocardiac lucency with air fluid level is seen in

- a) Hiatus hernia
- b) Distal end esophageal obstruction
- c) Eventration of diaphragm
- d) None

Correct Answer - A

Answer- A. Hiatus hernia

Hiatus hernia shows retrocardiac lucency with air or an air-fluid level above the diaphragm.

1369. Most common site for carcinoid tumor is

a) Esophagus

b) Lung

c) Appendix

d) Ileum

Correct Answer - D

Answer- D

- Historically, the most common site of gastrointestinal (GI) carcinoid tumors was the appendix.
- Currently, however, the most common site of carcinoids in the GI tract is the small intestine (30%), followed by the rectum (19.6%).
- In most studies, the appendix is only the third most common site of GI carcinoids, and in some studies, it is the fourth most common.

1370. Most common differential diagnosis for appendicitis in children is

- a) Gastroenteritis
- b) Mesenteric lymphadenopathy
- c) Intussusception
- d) Meckel's diverticulitis

Correct Answer - B

Answer- B. Mesenteric lymphadenopathy

Differential diagnosis of appendicitis in children -

1. Acute gastroenteritis
2. Intussusception
3. Meckel's diverticulitis
4. Mesenteric lymphadenitis (MC)
5. Inflammatory bowel disease
6. Constipation
7. Functional pain

1371. Abdominal surgery under LA, patient suddenly felt pain due to

a) Liver

b) Gut

c) Parietal peritoneum

d) Visceral peritoneum

Correct Answer - C

Answer- C. Parietal peritoneum

Embryologically parietal peritoneum is derived from the somatopleural layer of the lateral plate mesoderm. Its blood supply and nerve supply are the same as those of the overlying body wall. Because of the somatic innervation, it is pain sensitive." — BDC Anatomy

1372. Features of intestinal obstruction : clinically/ investigation by :

a) Abdominal distension

b) Vomiting

c) Fluid level in X-ray > 4

d) a and b

Correct Answer - D

Ans. is 'a' & 'b' i.e. Abdominal distension & Vomiting

- About option 'c'

> 5 air-fluid levels in x-ray abdomen suggest intestinal obstruction
Grainger's Diagnostic radiology writes - *"3 to 5 fluid levels less than 2.5 cm in length may be seen, particularly in the right lower quadrant, without any evidence of intestinal obstruction or paralytic ileus."*

1373. A 55 year male has history of dysphagia with vomiting of undigested food throughout the day, weight loss, emaciated & dehydrated. No mass palpable per abdomen. The modality of treatment is

a) IV total parenteral nutrition

b) Endoscopic dilation

c) IV normal saline

d) pH monitoring

Correct Answer - B

Answer- B. Endoscopic dilation

The symptom & sign complex indicates diagnosis of Achalasia. One of the treatment modalities for achalasia cardia is endoscopic dilation.

1374. Hose pipe appearance of intestine is a feature of

a) Crohns disease

b) Malabsorption syndrome

c) Ulcerative colitis

d) Hirsprung disease

Correct Answer - A

Answer- A. Crohns disease

Crohn's disease has a hose pipe appearance.

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1375. In old age for rectal prolapse palliative surgery in a patient unfit for surgery is

- a) Delorme's procedure
- b) Well's procedure
- c) Thiersch's operation
- d) Low anterior resection

Correct Answer - C

Answer- C. Thiersch's operation

Tightening the anus with a variety of prosthetic materials (anal encirclement)-

Anal encirclement procedures generally have been abandoned. Anal encirclement has limited application and is reserved by most surgeons for patients of the highest surgical risk or limited life expectancy because it can be done under local anesthesia. The original Thiersch procedure involved placing a silver wire around the external sphincter within the ischiorectal fat. Now synthetic mesh or silicone tubes are used instead of wire. The safety of current anesthetic techniques and the low morbidity and relative functional success of perineal proctectomy have made anal encirclement, for the most part, a procedure of the past.

**1376. 40 year old male complaints of GERD,
on endoscopy shows dysplasia.
Treatment**

a) Fundoplication

b) Esophageal resection

c) PPI

d) Dietmodification

Correct Answer - B

Answer- B. Esophageal resection

If severe dysplasia or intranural carcinoma is found on mucosal biopsy, an esophageal resection should be done.

1377. Renal stones which are laminated and irregular in outline are

a) Uric acid

b) Calcium oxalate

c) Struvite

d) Cystine

Correct Answer - B

Answer- B. Calcium oxalate

Calcium oxalate stones - Usually single, hard (aka Mulberry stone) -

- Dark colored d/t staining with altered blood.
- Spiky.
- On section Wavy concentric laminae.
- There may be secondary phosphate deposit on surface.
- High calcium content.

1378. A patient who has fallen over a loose manhole cover is brought to the clinic. On examination a perineal hematoma and blood in the external meatus is noted. Rupture of which of the following structure has resulted in perineal hematoma?

a) Rupture of membranous urethra

b) Rupture of bulbar urethra

c) Pelvic organ blunt trauma

d) Rupture of bladder

Correct Answer - B

The **bulbar urethra** is crushed upwards onto pubic bone, typically with significant bruising.

Cycling accidents, loose manhole cover and gymnasium accidents astride the beam account for number of cases.

CLINICAL FEATURES

The signs of a ruptured bulbar urethra are perineal bruising and haematoma, typically with a butterfly distribution. There is usually bleeding from the urethral meatus and retention of urine is also typically present.

Rupture of the membranous urethra typically occurs in association with a fractured pelvis and may be associated with an extraperitoneal rupture of the bladder.

The most common causes of pelvic fracture are road traffic accidents, severe crush injuries and falls.

The clinical features include urinary retention, blood at the urethral meatus.

There is typically marked bruising of the pubic area, scrotum and penis.

1379. Adson test is positive in:
September 2007

- a) Cervical spondylosis
- b) Cervical rib
- c) Cervical vertebra fracture
- d) Superior vena cava syndrome

Correct Answer - B

Ans. B: Cervical rib

Adson's test is used to assess for the presence of Thoracic Outlet Syndrome (cervical rib) at the scalene triangle.

Process

- The patient is placed in a sitting position, hands resting on thighs.
- The examiner palpates radial pulse on side being tested
- Patient actively rotates head to ipsilateral side being tested while the examiner laterally rotates and extends the patient's shoulder
- Patient takes a deep breath and is instructed to hold it
The examiner palpates the radial pulse while moving the upper extremity in abduction, extension, and external rotation. The patient then is asked to rotate her head toward the involved side while taking a deep breath and holding it. A positive exam will result in a diminished or absent radial pulse.

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1380. In a case of perforation peritonitis, emergency lapratomy, 2nd post operative day develops oliguria. Diagnosis

- a) Severe UTI
- b) Fluid retention
- c) Dehydration
- d) Catheter obstruction

Correct Answer - C

Answer- C. Dehydration

Oliguria may reflect inadequate renal artery perfusion due to hypotension, hypovolemia or low QT. It can also be a sign of intrinsic renal dysfunction.

1381. Etiology of bloody discharge from nipple

a) Duct papiloma

b) Breast abscess

c) Fibroadenoma

d) Cyst

Correct Answer - A

Answer- A. Duct papiloma

Table 1: Causes of nipple discharge

Physiologic

Duct abnormalities

- Intraductal papilloma
- Duct ectasia
- Periductal mastitis
- Carcinoma

Galactorrhea

- Hyperprolactinemia
- Hypothyroidism
- Medications: oral contraceptives, cimetidine, verapamil, phenothiazine, metoclopramide, alpha-methyldopa

Conditions that may mimic nipple discharge

- Eczema with drainage
- Paget's disease of the breast
- Nipple adenoma

1382. Carcinoma breast is least seen in

a) Superior outer quadrant

b) Inferior outer quadrant

c) Subareolar

d) Lower inner quadrant

Correct Answer - D

Answer- D. Lower inner quadrant

Upper inner → 12 - 15%

Upper outer → 50%

Lower inner → 3 - 5%

Lower outer → 6 - 10%

Central/areolar → 20%

[Ref Love & Bailey 25th/e p. 840, S. Das 7th/e p. 607]

1383. Which of the following stage of Breast Ca corresponds with following feature?

Breast mass of 6 x 3 cm. size
Ipsilateral supraclavicular lymph node
Distant metastasis cannot be assessed

a) T4 N3 MX

b) T4 N1 M1

c) T4 N0 M0

d) T3 N3c MX

Correct Answer - D

According to TNM staging system for breast cancer,

T3: Tumor >5 cm in greatest dimension

N3c: Metastasis in ipsilateral supraclavicular lymph node(s)

MX: Distant metastasis cannot be assessed

Ref: Hunt K.K., Newman L.A., Copeland E.M., Bland K.I. (2010). Chapter 17. The Breast. In F.C. Brunickardi, D.K. Andersen, T.R. Billiar, D.L. Dunn, J.G. Hunter, J.B. Matthews, R.E. Pollock (Eds), *Schwartz's Principles of Surgery*, 9e.

1384. Intraoperative sentinel lymph node detection in axilla is done by using

a) Mammography

b) Isosulfan blue dye

c) MRI

d) CT

Correct Answer - B

Answer- B. Isosulfan blue dye

Lymphatic mapping is performed by using isosulfan blue dye, technetium-labelled sulfur colloid albumin or a combination of both.

1385. Sentinel lymph node biopsy in carcinoma breast is done if -

- a) LN palpable
- b) Breast mass but no lymph node palpable
- c) Breast lump with palpable axillary node
- d) Metastatic CA breast

Correct Answer - B

Answer- B. Breast mass but no lymph node palpable

Axillary nodes if clinically palpable are removed by surgical dissection.

1386. Indication for sentinel node biopsy is

- a) Non palpable axillary lymph node
- b) Palpable axillary lymph node
- c) Mass > 5cm
- d) Metastasis

Correct Answer - A

Answer- A. Non palpable axillary lymph node

This will be of great significance in early breast carcinomas wherein lymph nodes are not clinically palpable nor detected by investigations such as ultrasound/CT scan of the axilla. . Indication: Early breast cancer with (T1 or T2 No) clinically node negative axilla.

1387. Breast conservation surgery is contraindicated in all except -

- a) Tumor > 4cm
- b) Multicentric tumor
- c) Axillary LN involvement
- d) Diffuse microcalcifications

Correct Answer - D

Answer- D

Breast conservative surgery

Indications

- Lump < 4 cm
- Clinically negative axillary nodes
- Mammographically detected lesion
- Well-differentiated tumour with low S phase
- Adequate sized breast to allow proper RT to breast
- Breast of adequate size and volume
- Feasibility of axillary dissection and radiotherapy to intact breast

Contraindications

- Tumour > 4 cm
- Positive axillary nodes > N1
- Tumour margin is not free of tumour after breast conservative surgery needs MRM
- Poorly differentiated tumour
- Multicentric tumour
- Earlier breast irradiation
- Tumour/breast size ratio is more (central tumour)
- Tumour beneath the nipple
- Extensive intraductal carcinoma

1388. The following are suitable for simple mastectomy except-

a) Pagets disease

b) Fibroadenoma

c) Cystosarcoma phyllodes

d) None

Correct Answer - B

Answer- B. Fibroadenoma

Indications for simple mastectomy

A) Without an axillary procedure

1. Risk-reducing mastectomy
2. Local recurrence in a previously treated breast cancer
3. Malignant phyllodes tumor (cystosarcoma phyllodes)
4. b) With concomitant axillary procedure
5. Locally advanced breast cancer (including paget disease)
6. Multifocal breast cancer
7. Extensive ductal carcinoma in situ (DCIC)
8. Patient is unsuitable for breast-conservative approach

1389. Treatment of choice for medullary carcinoma of thyroid is:

a) Total thyroidectomy

b) Partial thyroidectomy

c) 1131 ablation

d) Hemithyroidectomy

Correct Answer - A

Ans. is 'a' i.e. Total thyroidectomy

Treatment of thyroid malignancies is as follows :- (Note- *this is a very important and often repeated topic in PG exams, so if time permits one must turn the pages of Schwartz Sx or any other standard book for detailed study*).

- Papillary Thyroid Carcinoma (PCT)
- High-risk tumors or bilateral tumors
 - Total thyroidectomy (or near total thyroidectomy).
- Low risk
 - The treatment is *controversial*. *Conservative approach* advocates *hemithyroidectomy* (lobectomy + isthmusectomy).
 - *More radical approach* advocates *total thyroidectomy* (or near total thyroidectomy). - *Schwartz Sx and Devita's Oncology* are in favour of radical approach.
 - (High and Low risk decided by any one of the many classification systems)
- If enlarged lymph nodes are found
 - *Modified radical neck dissection* is done of the affected side.
- When patients are found to have a minimal papillary thyroid carcinoma in a thyroid specimen removed for other reasons, *unilateral thyroid lobectomy and isthmusectomy* is usually

considered to be adequate treatment, unless the tumor has evidence of angioinvasion, multifocality, or positive margins.

Follicular Thyroid Carcinoma (FTC)

- FNA biopsy is unable to distinguish *benign* follicular lesions from *follicular carcinomas* therefore, *preoperative diagnosis of cancer is difficult* unless distant metastases are present.
- Patients diagnosed by *FNA biopsy* as follicular lesions should undergo *thyroid lobectomy + isthmusectomy* (because at least 80% of these patients will have benign adenomas).

The resected lobe is subjected to *histology (intraoperative frozen – section examination*, though usually not helpful should be performed in high risk cases).

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1390. Which of the following is used in the treatment of well differentiated thyroid carcinoma

a) I131

b) 99m Tc

c) 32p

d) MIBG

Correct Answer - A

Answer- A. I131

I131 is the radioisotope of choice for radiotherapy of thyroid carcinoma and hyperparathyroidism.

1391. Sistrunk's operation is used in

- a) Parotid tumour
- b) Thyroglossal fistula
- c) Thyroglossal cyst
- d) b and c

Correct Answer - D

Ans. Two options are correct i.e., 'b' i.e. Thyroglossal fistula & 'c' i.e. Thyroglossal cyst

Sistrunk procedure is used for excision of **thyroglossal duct cyst**

1392. Treatment for malignant melanoma is

a) Wide excision

b) Radiotherapy

c) Excision

d) Chemotherapy

Correct Answer - A

Answer- A. Wide excision

Management of Malignant Melanoma

- Wide local excision of the primary tumor is the management of choice.
- The recommended margin of resection depends on the thickness of the tumor.

1393. Moures sign is seen in

- a) Carcinoma
- b) Appendicitis
- c) Varicose vein
- d) Pancreatitis

Correct Answer - A

Answer- A. Carcinoma

"In normal persons, a click is felt when larynx is moved from side to side over vertebral column, this is called laryngeal click (post cricoid crepitus) It is absent in post cricoid carcinoma". — Moure's sign

1394. True about Marjolin's ulcer -

a) Develops in long standing scar

b) Sq cell Ca develops

c) Slow growing lesion

d) All

Correct Answer - D

Ans is 'a' i.e. Develops in long standing scar; 'b' i.e. sq cell Ca develops; 'c' i.e. Slow growing lesion

Baghdad sore or oriental sore or Delhi boil is caused by Leishmania Tropica.

1395. Which one of the following preservative is used while packing catgut suture?

a) Isopropyl alcohol

b) Colloidal iodine

c) Glutaraldehyde

d) Hydrogen peroxide

Correct Answer - A

10% isopropyl alcohol is the routine packing fluid used in packing catgut sutures.

Catgut is available in glass tubes containing isopropyl alcohol and small quantity of water.

Catgut is prepared from the intestine of sheep.

Ref: Pharmaceuticals By Dr. R. S. Gaud, Page 196; Veterinary Medicine/small animal clinician, Volume 72, Issues 1-6, Page 835.

1396. Acute orchitis all are seen except

a) Increased local temprature

b) Decreased blood flow

c) Etythematous scrotum

d) Raised TLC

Correct Answer - B

Answer- B. Decreased blood flow

USG shows increased blood flow in acute stage.

Ischemic orchitis may set in, in late stages resulting in reduced blood flow on USG.

1397. Prehn sign is positive in

a) Acute epididymo-orchitis

b) Chronic orchitis

c) Testicular torsion

d) None

Correct Answer - A

Answer- A. Acute epididymo-orchitis

On elevation of testis the-

- Pain is not relieved in torsion (test is negative)
- Pain relieved in epididymo-orchitis (test is positive)

1398. Commonest site of carcinoma tongue -

a) Apical

b) Lateral borders

c) Dorsum

d) Posterior 1/3

Correct Answer - B

Ans. is 'b' i.e., Lateral borders

Most common site is middle of the lateral border or the ventral aspect of the tongue.

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1399. All are true about carcinoma penis except

- a) Most common type is verrucous
- b) Spreads by blood borne metastasis
- c) Leads to erosion of artery
- d) Slowly progressive

Correct Answer - A

Answer- A. Most common type is verrucous

MC type – SCC

ETIOLOGY-

- Premalignant lesions-
- Genital warts- Bushke- Lowenstein tumour is a giant penile condyloma (verrucous carcinoma of penis)
- Erythroplasia of Queyrat or Paget's disease of penis- precancerous lesion

SPREAD-

- Blood spread is rare
- Death may occur due to erosions of femoral vessels by inguinal LN.
- Slowly progressive

1400. In testicular torsion, surgery within how much time can save viability of testis

a) 6 hr

b) 12 hr

c) 24 hr

d) 1 week

Correct Answer - A

Answer- A. 6 hr

"More than 80% testes can be salvaged if surgery is performed within 6 hours".

[Ref Schwartz 9th/e p. 1469]

1401. Which of the following nerve is commonly damaged during McBurney's incision?

a) Subcostal nerve

b) 10th thoracic nerve

c) 11th thoracic nerve

d) Iliohypogastric nerve

Correct Answer - D

The nerve commonly damaged during McBurney's incision is Iliohypogastric Nerve. Damage to this nerve result in the development of right inguinal hernia.

Mc Burney's incision/ grid iron incision is commonly done for appendectomy. In this an oblique incision is made in the right iliac fossa about 5cm above and medial to the anterior superior iliac spine at right angle to the spino umbilical line.

Ref: Anatomy of Abdomen and Lower Limb By Singh, Page 46.

1402. Investigation using dye to find out stone in salivary gland

a) Sialography

b) Mammography

c) MR angiography

d) USG

Correct Answer - A

Answer- A. Sialography

Salivary duct stones & strictures

Chronic sialadenitis

Tumors of salivary glands

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1403. All of the following are causes of hemobilia, EXCEPT:

a) Trauma to Abdomen

b) Malignancy

c) Rupture of hepatic artery aneurysm

d) Hepatitis

Correct Answer - D

Hemobilia presents with the triad of biliary colic, obstructive jaundice, and occult or gross intestinal bleeding.

Causes are,

- Hepatic trauma
- Ductal parasitism (*Ascaris lumbricoides*)
- Oriental cholangiohepatitis
- Hepatic neoplasms
- Rupture of a hepatic artery aneurysm
- Hepatic abscess
- Choledocholithiasis

The diagnosis may be suspected from a technetium-99m-labeled red blood cell scan, but an arteriogram is usually required for diagnosis and planning of therapy.

Ref: Doherty G.M. (2010). Chapter 25. Biliary Tract. In G.M. Doherty (Ed), *CURRENT Diagnosis & Treatment: Surgery*, 13e.

1404. ERCP is indicated for the following except

- a) Distal CBD tumor
- b) Hepatic porta tumor
- c) Proximal cholangiocarcinoma
- d) Gall stone pancreatitis

Correct Answer - C

Answer- C. Proximal cholangiocarcinoma

ERCP is not technically possible in proximal biliary obstructions.

1405. Alagille syndrome is

a) Bile duct paucity

b) IHBR dilation

c) PBC

d) PSC

Correct Answer - A

Answer- A. Bile duct paucity

syndromic paucity of interlobular bile ducts (Alagille syndrome) is the most common form of familial intrahepatic cholestasis. Chronic cholestasis affects 95% of patients. Peripheral pulmonic stenosis is observed in approximately 90%. Vertebral arch defects are seen (e.g., butterfly vertebrae, hemivertebrae, and a decrease in the interpedicular distance). Ophthalmologic examination may reveal posterior embryotoxon, retinal pigmentation, and iris strands.

1406. Hemorrhagic pancreatitis, bluish discoloration of flank

a) Grey turner sign

b) Cullen sign

c) Trosseue sign

d) None

Correct Answer - A

Answer- A. Grey turner sign

In acute pancreatitis :

- .. Cullen's sign : Ecchymosis (bluish-purple color) around umbilicus (periumbilical area)
- ?. Grey turner's sign : Ecchymosis (bluish-purple color) in flank

1407. Complication of chronic pancreatitis include all except-

a) Renal artery thrombosis

b) Pseudocyst

c) Splenic vein thrombosis

d) Fistulae

Correct Answer - A

Answer- A. Renal artery thrombosis

Complications-

- Obstructive jaundice
- Carcinoma of pancreas
- Pseudocysts
- Pancreatic duct leak with ascites or fistula
- Thrombosis of splenic vein
- Abscess Perforation

1408. The CT severity index in acute pancreatitis is described by:

a) Balthazar

b) Mengini

c) Chapman

d) Napelon

Correct Answer - A

The CT severity index (CTSI)-described by Balthazar

Balthazar CT Severity Index

CT Grade	Score

- A. Normal- 0
- B. Enlarged gland -1
- C. Peri-pancreatic inflammation- 2
- D. One fluid collection- 3
- E. Two or more collections- 4

Necrosis Score

-
- 30%-50%- (4)
- >50% -(6)

Ref: ACR Appropriateness Criteria, Acute Pancreatitis.

1409. Kehr's sign seen in splenic rupture is -

a) Pain over left shoulder

b) Pain over right scapula

c) Periumbilical pain

d) Pain over renal angle

Correct Answer - A

Ans. is 'A' i.e., Pain over left shoulder

- In splenic rupture the pain may be referred to the tip of the left shoulder.
This is known as Kehr's sign.
- It occurs due to *irritation of the undersurface of the diaphragm* with blood and the pain is referred to the shoulder through the affected fibres of *phrenic nerve (C₄ and C5)*.
- Kehr's sign can be elicited by *bimauial compression* of the left upper quadrant after the patient has been in *Trendelenburg's position* for about 10 minutes prior to the manoeuvre.

1410. During functional endoscopic sinus surgery the position of patient is

- a) Trendelenberg
- b) Lateral
- c) Reverse trendelenberg
- d) Lithotomy

Correct Answer - C

Answer- C. Reverse trendelenberg

Using the reverse trendelenburg position during functional endoscopic sinus surgery (FESS) is safe, simple, and cost-free method that has been found to reduce intraoperative blood loss.

1411. Head & face burn in infant is

a) 15%

b) 18%

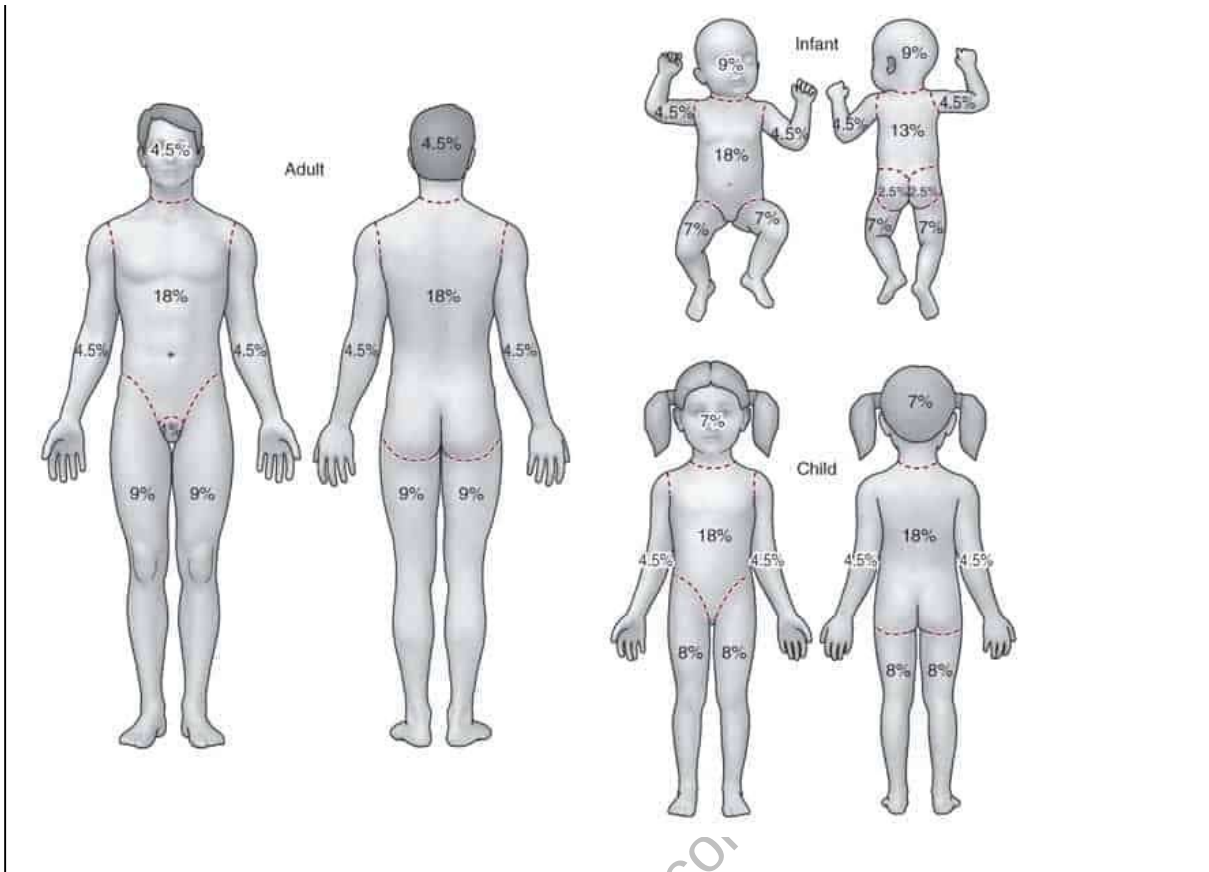
c) 12%

d) 32%

Correct Answer - B

Answer- B. 18%

"Infants have 21% of the TBSA in the head and neck" — Sabiston
Children have a relatively larger portion of the body surface area in the head and neck which is compensated for by a relatively smaller surface area in the lower extremities. Infants have 21% of TBSA in the head and neck and 13% in each leg.



1412. Plasma expanders are used in

- a) Endotoxic shock
- b) Neurogenic shock
- c) Vasovagal shock
- d) Anaphylactic shock

Correct Answer - A

Answer- A. Endotoxic shock

Uses of plasma expanders 4 to correct hypovolemia, e.g. in burns, hypovolemic and endotoxic shock, severe trauma.

Contraindications - Severe anaemia, cardiac failure, pulmonary edema, renal insufficiency.

1413. Whiplash injury is tear of which ligament

- a) Ligamenta flava
- b) Ant. longitudinal ligament
- c) Post. longitudinal ligament
- d) Supraspinal ligament

Correct Answer - B

Answer- B. Ant. longitudinal ligament

Hyperextension theory describes whiplash injury.

Hyperextension most commonly results in anterior cervical column injuries in the form of anterior longitudinal ligament and intervertebral disc ruptures.

1414. Hinge fracture is:

a) Depressed fracture

b) Sutural fracture

c) Orbital fracture

d) Basilar fracture

Correct Answer - D
Ans. Basilar fracture

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1415. Neurosurgery is indicated for all except

a) SDH

b) EDH

c) Intracerebral bleed

d) Diffuse axonal injury

Correct Answer - D

Answer- D. Diffuse axonal injury

Diffuse axonal injury does not have any specific treatment

Symptomatic treatment and stabilization of patient is required.

Subdural hematoma, (SDH), epidural hematoma (EDH) and intracerebral hematoma (parenchymal hemorrhage) may require surgery

1416. Blood loss in class III hemorrhagic shock -

a) < 750 ml

b) 750 - 1500 ml

c) 1500-2000 ml

d) > 2000 ml

Correct Answer - C

Ans. is 'c' i.e., 1500-2000 ml

Parameters	Class I	Class II	Class III	Class IV
Blood Loss (mL)	Up to 750	750–1500	1500–2000	> 2000
Blood Loss (%BV)	Up to 15%	15–30%	30–40%	> 40%
Pulse rate (beats/min)	< 100	> 100	> 120	> 140
Blood Pressure	Normal	Minimal decrease	Decreased	Significantly decreased
Pulse Pressure	Normal	Narrowed	Narrowed	Unobtainable or very narrow
Hourly urine output	≥ 0.5 mL/kg	≥ 0.5 mL/kg	< 0.5 cc/kg	Minimal
CNS/Mental status	Slightly anxious	Mildly anxious	Anxious and confused	Confused or lethargic

1417. Young male with history of trauma having left sided testis swollen & erythematous. Other side normal diagnosis

a) Torsion

b) Carcinoma

c) Hematoma

d) Hernia

Correct Answer - C

Answer- C. Hematoma

Blunt trauma to testis can cause hematoma.

There is associated tenderness, swelling and ecchymosis of the hemiscrotum.

1418. All the following are true of Craniopharyngioma *except*

- a) Derived from Rathke's pouch
- b) Contains epithelial cells
- c) Present in sella or infra-sellar location
- d) Causes visual disturbances

Correct Answer - C

Answer is C (Present in sella or infrasellar location):

Some of these lesions arise from the sella, but most are suprasellar (Not infra-sellar). They arise from near the pituitary stalk and commonly extend into the supra sellar cistern.

- *Craniopharyngiomas arise from Rathke's pouch and constitute 3-5% of all intracranial neoplasms.*
- *Some of these lesions arise from the sella, but most are suprasellar (Not infra-sellar). They arise from near the pituitary stalk and commonly extend into the supra sellar cistern.*
- *Consists of nests of cords of stratified squamous or columnar epithelium embedded in a spongy reticulum — Robbins 61h/1129*
- *Visual complaints are the presenting feature in about 80% of adults and 60% of children.*

1419. Steroids are given in rheumatic fever when there is-

a) Carditis

b) Chorea

c) Subcutaneous nodules

d) All

Correct Answer - A

Ans. is 'a' i.e., Carditis

Suppressive therapy of RF

- o If patient has carditis with CHF —> Steroids
- If patients has carditis without CHF —> Steroids or aspirin (steroids are preferred)
- If patient does not have carditis —> Aspirin *The total duration of suppressive therapy is 12 weeks.*

1420. Acrodermatitis hemorrhagica is due to deficiency of

a) Zinc

b) Manganese

c) Copper

d) Selenium

Correct Answer - A

Ans. is 'a' i.e., Zinc

Symptoms of Zinc Deficiency

Mild deficiency

Growth retardation

Severe deficiency

Dwarfism

Cardiomyopathy

Hypogonadism

Infertility

Loss of taste

Poor wound healing

Deformed bones

Diarrhoea

Alopecia

Night blindness

Skin striae

Nail changes

- Acrodermatitis enteropathica is an inherited autosomal recessive disorder with impaired intestinal disorder and transport of Zinc.
- Patient suffers with pustular and bullous dermatitis, alopecia, growth retardation diarrhoeas, secondary infection, lethargy, irritability and depression. Oral Zinc supplementation leads to remission.

Zinc

- *2nd most abundant trace element in the body.*
- *Most common catalytic metal ion in the cell cytoplasm.*
- *Component of more than 100 enzymes like DNA polymerase, RNA polymerase, transfer RNA synthetase.*
- *It plays role in all stages of insulin metabolism.*

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1421. Child draws triangle at what age ?

a) 3 years

b) 5 years

c) 6 years

d) 7 years

Correct Answer - B

Ans. is 'b' i.e., 5 years

Age

12-24 months

2 years

3 years

4 years

rectangle

5 years *Draws a triangle*

Milestone

Tries to scribble spontaneously

Draws a vertical or horizontal line

Draws a circle

Draws a cross (plus sign) and draws a

**1422. Head control/ neck holding is possible
in an infant by:
September 2012**

a) 1 month

b) 2 months

c) 3 months

d) 6 months

Correct Answer - C

Ans. C i.e. 3 months

- When a child is tried to pull to sit :-

- i) *Head lag* --> Age is less than 4 weeks
- ii) *Partial head lag* --> 2-3 months
- iii) *Head (Neck) Control* ---> 3 months.
- iv) *Lifting of head up* --> 5 months.

1423. Sitting in Tripod position at which month ?

a) 5 months

b) 6 months

c) 8 months

d) 9 months

Correct Answer - B

Answer- B. 6 months

6 Month → Sit with support, sits in tripod position

8 Month → Sit without support

9 Month → Stand with support

12 Month → Stand without support Walk with support

15 Month → Walk alone, creep upstairs

1424. Weight of newborn quadruplets by -

a) 9 months

b) 12 months

c) 2 year

d) 3 years

Correct Answer - C

Answer- C. 2 year

Triple- 1 yr

Four times- 2 yrs

Five times- 3 yrs

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1425. From 6 weeks to 12 weeks... Infant weight increases at rate of -

a) 30 g/d

b) 40 g/d

c) 50 g/d

d) 60 g/d

Correct Answer - A

Answer- A. 30 g/d

Average weight of New born baby is 3 kg.

Newborn loses extracellular fluid about 10% of body weight and start gaining weight and become equal to birth weight at day 10 of life.

Subsequently, they gain weight at a rate of approximately 25 to 30 gm per day for the first 3 month of life.

1426. Arm span and height become same at what age (year) -

a) 9

b) 11

c) 13

d) 15

Correct Answer - B

Answer- B. 11

In under-5 children , arm span is 1 to 2 cm smaller than body length.

During 10-12 years of age , arm span = height.

In adults arm span is more in adults by 2 cm.

Abnormally large arm span is seen in patients with : (1)

Arachnodactyly (Marfan syndrome) (2) Eunuchoidism (3)

Klinefelter's Syndrome (4) Coarctation of aorta.

1427. When ICF and ECF of child becomes equal to adult person -

a) 1 year

b) 2 year

c) 3 year

d) 4 year

Correct Answer - A

Ans. is 'a' i.e., 1 year

o In fetus, ECF is much larger than ICF

o By the age of 1 year, ratio of ICF to the ECF volume approaches adult level.

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1428. First permanent teeth to erupt is:
September 2008

a) First premolar

b) Second premolar

c) First molar

d) Second molar

Correct Answer - C

Ans. C: First molar

At the age of about 6-7 year, first permanent molar teeth erupts behind the second temporary molar.

At the age of 9, there are 12 permanent teeth. At the age of 11, there are 20 permanent teeth At the age of 14, there are 28 permanent teeth

1429. Nocturnal enuresis may be considered normal upto:
March 2005

a) 3 years

b) 4 years

c) 5 years

d) 6 years

Correct Answer - D

Ans. D: 6 years

Nocturnal enuresis is normal upto 6 years while its normal upto the age of 4 years for daytime.

1430. The following are characteristic of autism except -

- a) Onset after 6 years of age
- b) Repetitive behaviour
- c) Delayed language development
- d) Severe deficit in social interaction

Correct Answer - A

Ans. is 'a' i.e., Onset after 6 years of age

Autism

- Autism is a neurologic disorder characterized by ?
 1. Qualitative impairment in social interaction
 2. Qualitative impairment in communication.
 3. Restricted repetitive and stereotyped patterns of behaviour, interests, and activities.
- *Onset of symptoms is usually before 3 years of age.*
- *3-5 times more common in boys, but more severe when occurs in girls.*
- *More common among low socio-economic groups.*

1431. In protein deficiency all are seen except

-

a) Flaky paint like skin

b) Glossitis

c) Nail change

d) Cherry like skin

Correct Answer - D

Answer- D. Cherry like skin

redness on the skin, brittle nails, thin hair

Glossitis

Risk of infections

Fatty liver

Protein deficiency may leave its mark on the skin, hair and nails.

1432. In a child having diarrhoea with perianal moist crust. The diagnosis is -

a) Acrodermatitis enteropathica

b) Riboflavin deficiency

c) Pellagra

d) None of above

Correct Answer - A

Answer- A' Acrodermatitis enteropathica

Acrodermatitis enteropathica is a rare autosomal recessive disorder caused by an inability to absorb sufficient Zinc from the diet.

Associated manifestations :- Chronic diarrhoea, stomatitis, glossitis, Paronychia, Nail dystrophy, Growth retardation, irritability, delayed wound healing, Bacterial & candidal infection.

1433. Vitamin B6 is used in treatment of -

- a) Homocystinuria
- b) Xanthourenic aciduria
- c) Cystathionuria
- d) All of above

Correct Answer - D

Answer- D. All of above

Vit B6 dependent convulsion.

Vit B6 responsive anemia.

Xanthurenic acidmia

Cystathioninuria

Homocystinuria

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1434. Apnea of prematurity ?

a) > 10 sec

b) > 15 sec

c) 20 sec

d) > 30 sec

Correct Answer - C

Ans. is 'c' i.e., 20 sec

- Apnea of prematurity defined as sudden stoppage of breathing that lasts for 20 sec or is associated with bradycardia or cyanosis.
- Apnea of prematurity should be differentiated from periodic breathing which is normal phenomenon in preterm neonate

1435. All of the following are features of prematurity in a neonate, except -

a) No creases on sole

b) Abundant lanugo

c) Thick ear cartilage

d) Empty scrotum

Correct Answer - C

Ans. is 'c' i.e., Thick ear cartilage

The ears in a premature neonate are soft and flat with ear cartilage being deficient and pliant (and not thick)

Features of prematurity in a Neonate :

- o Baby is small in size usually less than 47 cm long.
- o Head is relatively large, sutures are widely separated and fontanelle are large
- o Face is small and buccal pad of fat is minimal
- Skin is thin and pinkish and appears shiny due to generalized edema.
- *Skin is covered with abundant lanugo and there is little vernix caseosa.*
- Subcutaneous fat is reduced
 - o The breast nodule is less than 5 mm wide
 - o The ears are soft and flat with ear cartilage being deficient and pliant
 - o Testes are not descended into scrotal sac. (Empty scrotum)
- Scrotal sac is poorly pigmented and has less rugosities.
 - o In females labia majora appears widely separated, exposing the labia minora and the clitoris.
 - o *Deep creases are not well developed in the sole.*

(There may be a single deep crease over the anterior one third of the sole) o Neonatal reflexes such as Moro, Suckling & Swallowing are sluggish.

o There is hypotonia with a poor recoil of flexed forearm when extended.

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1436. The characteristics of caput succedaneum include all of the following except :

- a) Crosses midline
- b) Crosses the suture line
- c) It does not disappear within 2-3 days
- d) It is a diffuse edematous swelling of the soft tissues of the scalp

Correct Answer - C

It does not disappear within 2-3 days

Location- subcutaneous plane

Clinical features-

Softens gradually and disappears within 2-3 days

Diffuse crosses suture line ill defined margin.

Not associated with prolonged jaundice

1437. Which of the following is the principal mode of heat exchange in an infant incubator ?

a) Radiation

b) Evaporation

c) Convection

d) Conduction

Correct Answer - C

Ans. is 'c' i.e., Convection

"Convection warmed incubators are being routinely used for thermal regulation of the premature neonate's ambient air" - Ghai 6/e 154

1438. Prostaglandin analogue used in PDA is

-

a) Anapristone

b) Misoprost

c) Danaprostone

d) PGE-2

Correct Answer - B

Answer- B. Misoprost

Prostaglandin inhibitor such as indomethacin and special form of ibuprofen are used for duct closure in preterm.

PGE-1 used to keep open duct are Alprostadil or misoprostol.

1439. Drug used to keep PDA open -

a) PGE1

b) PGI2

c) PGE

d) PGH2

Correct Answer - A

Answer- A. PGE1

Prostaglandin infusion usually effective in keeping the ductus arteriosus open before surgical intervention to reduce hypoxemia and acidemia before surgery in ductus dependent lesion like.

1440. True about Ebstein anomaly is?

a) Right ventricular dilatation

b) Right atrial dilatation

c) Left ventricular dilatation

d) Left atrial dilatation

Correct Answer - B

Ans. is 'b' i.e., Right atrial dilatation

Ebstein's anomaly

- Ebstein anomaly consists of downward displacement of an abnormal tricuspid valve into the right ventricle. o Normally tricuspid valve has three leaflets Anterior, posterior and septal.
 - Fixed end of these leaflets is attached to valve ring in tricuspid area.
 - In Ebstein anomaly, anterior leaflet is attached to valve ring as normal, but the other two leaflets (posterior and septal) are displaced downward and are attached to the wall of left ventricle.
 - The portion of right ventricle above the tricuspid valve becomes a part of right atrium → *atrialized right ventricle*. Hemodynamics
 - The tricuspid valve anomaly results in obstruction of blood flow as well as regurgitation of blood from the right ventricle into the right atrium → Dilatation and hypertrophy of right atrium due to volume overload.
 - Blood flows right atrium to left atrium through patent foramen ovale or ASD → Right to left shunt and cyanosis. Clinical manifestations
1. Cyanosis → Fatigue
 2. Dyspnea on exertion → Paroxysmal attacks of tachycardia Signs
 3. Cyanosis and clubbing → S₂, wider split but variable
 4. Dominant V wave on JVP. → Right ventricular S₃
 5. Systolic thrill at the left sternal border → Right atrial S₄.

S_i normal

- Systolic murmur due to regurgitation at tricuspid valve.
- Delayed diastolic murmur due to obstruction at tricuspid valve like tricuspid stenosis.
- Both systolic and diastolic murmur produced at the tricuspid valve have scratchy character like pericardial friction rub.

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1441. Which condition is most commonly associated with coarctation of aorta?

a) PDA

b) Bicuspid aortic valve

c) Aortic stenosis

d) VSD

Correct Answer - B

Answer is B (Bicuspid Aortic Valve)

The most common associated cardiac anomaly with coarctation of aorta is bicuspid aortic valve (Harrison's 17th /1462) Coarctation of aorta is associated with a bicuspid aortic valve in more than 70% of cases - (Nelson 18th / 1900)

Associated anomalies with coarctation of Aorta Q

- Bicuspid Aortic valve^Q (commonest)
- PDAQ
- VSDQ
- Tubular hypoplasia of aortic arch^Q
- Aortic stenosis^Q (valvular / subvalvular)

Shone complex

Coarctation of Aorta

Left sided obstructive lesions

(Mitral valve abnormalities and subaortic stenosis)

Other Associated lesions that have been asked previously

- Mitral valve abnormalities (Subvalvular mitral ring /parachute mitral valve)
- Turner's syndrome^Q

1442. Hilar dance on fluoroscopy is seen in:

a) ASD

b) TOF

c) VSD

d) TGV

Correct Answer - A

Ans. ASD

Fluoroscopic examination done in a patient with ASD shows hilar dance sign due to pulsation of central pulmonary artery.

CXR features of ASD:

- There is no enlargement of left atrium except in few cases of Lutembacher syndrome.
- The heart in ASD is sometimes displaced to the left.
- The ascending aorta and its arch tends to appear smaller than normal, probably due to rotation of the ascending aorta by enlarged right atrium and right ventricle causing sagittal alignment of the aortic arch. Kerley B lines in a patient with ASD should always suggest an associated mitral valve abnormality(**Lutembacher syndrome**).

- **The Goose neck deformity** is seen in ASD on cardioangiography.

Ref: Clinical Diagnosis of Congenital Heart Disease By M. Satpathy page 78, Radiodiagnosis, Nuclear Medicine, Radiotherapy and Radiation Oncology By Bipin Valchandji Daga page 139.

1443. WPW syndrome is associated with -

a) Ebstein anomaly

b) TOF

c) VSD

d) TAPVC

Correct Answer - A

Answer- A. Ebstein anomaly

Wolff-Parkinson-White syndrome (WPW) is one of several disorders of the conduction system of the heart that are commonly referred to as pre-excitation syndromes.

People with WPW may have more than one accessory pathway seen in individuals with Ebstein's anomaly.

1444. Commonest type of cong. cyanotic heart disease is -

a) ASD

b) SD

c) TOF

d) PDA

Correct Answer - C

Ans. is 'c' i.e., TOF

Tetralogy of fallot is the commonest cyanotic congenital heart disease.

Cyanotic Congenital heart diseases

o Cyanotic CHDs are *Right to Left shunts*.

o These are further divided into : ?

1) Cyanotic CHD with decreased pulmonary blood flow.

This group includes *TOF, Pulmonary atresia with intact septum, tricuspid atresia, total anomalous pulmonary venous return with obstruction.*

These lesions have following components : -

a)Obstruction to pulmonary blood flow at tricuspid right ventricular or pulmonary valve level.

b)A pathway by which systemic venous blood enters the systemic circulation via a patent foramen ovale or ASD or VSD.

Degree of cyanosis depends on the degree of obstruction to pulmonary blood flow : -

i) Mild obstruction

Cyanosis is precipitated by stress, but may be absent at rest.

ii) Severe obstruction

Pulmonary blood flow is dependent on patency of the ductus

arteriosus. When the ductus closes (10-21 days), the neonate experience profound hypoxemia, cyanosis and shock.

2) Cyanotic CHD with increased pulmonary blood flow.

This group of lesions is not associated with obstruction to pulmonary blood flow.

Cyanosis caused by any of the following mechanisms.

i) *Abnormal ventricular-arterial connection (e.g., Transposition of great vessels)* In this, aorta arises from rt ventricle, So that systemic venous blood returning to the right atrium is pumped directly back to the body, and oxygenated blood returning from lung is pumped back into the lungs.

ii) *Total mixing of systemic venous and pulmonary venous blood (e.g., total anomalous pulmonary venous return, truncus arteriosus, a common atrium or ventricle)* Deoxygenated systemic venous blood and oxygenated pulmonary venous blood mix completely in the heart and, as a result, oxygen saturation is equal in the pulmonary artery and aorta. *If pulmonary blood flow is not obstructed, these infants have a combination of Cyanosis and heart failure. In Contrast, if pulmonary stenosis is present, these infants have cyanosis alone.*

1445. Most common syndrome associated with A-V canal defect -

a) Down syndrome

b) Klinefelter syndrome

c) Turner syndrome

d) Marfan syndrome

Correct Answer - A

Answer- A. Down syndrome

It is also called as atrioventricular canal defect (AVCD) or endocardial cushion defect.

It covers a spectrum of congenital heart malformation characterized by contiguous atrial and ventricular septal defects with markedly abnormal AV valve.

AVSD may be :-

1. Incomplete AVSD: It is the simplest form and nothing else but ostium primum type of ASD in which there is a common atrioventricular junction but separate valvular orifices for right and left ventricles. It is more common in Down syndrome.
2. Complete AVSD : There is a common atrioventricular junction and single common valvular orifice.

1446. Most common ASD in down syndrome is ?

a) Ostium primum

b) Ostium secundum

c) Absent atrial septum

d) Sinus venosus

Correct Answer - A

Ans. is 'a' i.e., Ostium primum

- About 40% children with down syndrome have congenital heart disease.
- Endocardial cushion defect (ASD with ostium primum) account for 40-60% of cases.

1447. Brain abscess in cyanotic heart disease is commonly located in

a) Cerebellar hemisphere

b) Thalamus

c) Temporal lobe

d) Parietal lobe

Correct Answer - D

Ans. is 'd' i.e. Parietal lobe

Brain abscesses in congenital cyanotic heart diseases occur due to hematogenous seeding of bloodborne bacteria. These blood borne bacteria bypass the pulmonary capillary bed d/t *right to left shunt*. They commonly infect *parietal & frontal lobes* (territory of middle cerebral artery).

Location of Brain Abscesses

Etiology

Otitis media,
mastoiditis

Paranasal sinusitis,
dental inf.

Hematogenous

Location

Temporal lobe > Cerebellum

Frontal lobes

Parietal lobe, post-frontal lobes
(MCA territory)

1448. In which of the following differential cyanosis found?

a) VSD with reversal of shunt

b) PDA with reversal of shunt

c) ASD with reversal of shunt

d) Tetralogy of Fallot

Correct Answer - B

Ans. is 'b' i.e., PDA with reversal of shunt

Differential cyanosis

o When one extremity is pink and the other extremity is cyanotic, it is referred to as differential cyanosis.

1449. % of children with simple febrile seizure developing epilepsy is -

a) 1-2 %

b) 2-5 %

c) 5-10 %

d) 10-15 %

Correct Answer - A

Answer- A. 1-2 %

Between 2% to 7% of all children with febrile seizures develop epilepsy if followed upto the age of 25 years. Risk depends on type of febrile seizure :

1. Simple febrile seizures 4 2% of all children with simple febrile seizures.
2. Complex febrile seizures - 6-8% of all children with complex febrile seizures.

1450. Drug of choice for infantile spasm is?

- a) Vigabatrin
- b) Adrenocorticotrophic hormone (ACTH)
- c) Ethosuximide
- d) Carbamazepine

Correct Answer - A

Ans. 'a' i.e., Vigabatrin

Vigabatrin (drug of choice), ACTH (2nd choice) and corticosteroids are used for treatment.

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1451. The most common cause of meningitis in children aged 5 yrs is-

a) H influenzae

b) N. meningitides

c) Staphylococcus

d) E.coli

Correct Answer - B

Ans. is 'b' i.e., N. meningitides

Commonest causes of meningitis

- Neonatal - Group B streptococcus most common, E.coli second most common.
- 2 months to 3 years • Pneumococci > Meningococci > H. influenzae
- 3 years to 20 years Meningococcus
- > 20 years • Pneumococci

1452. Most common cause of neonatal meningitis -

a) Staphylococcus

b) E. coli

c) H. influenzae

d) Pneumococcus

Correct Answer - B

Ans. is 'b' i.e., E. coli

"Group B streptococcus followed by E.coli are the two most common causes of neonatal meningitis".

Most common cause of neonatal meningitis → Group B streptococcus (Str. agalactiae) Second most common cause of neonatal meningitis -- E.coli

1453. Common deformity in chiari H malformation is -

a) Syringomyelia

b) Meningo myelocele

c) Hydrocephalus

d) All of above

Correct Answer - D

Answer- D. All of above

Chiari malformation is divided into :

1. Type I : Produce symptoms during adolescence or adulthood is usually not associated with hydrocephalus. The deformity consists of displacement of cerebellar tonsils into the cervical canal.
2. Type II : It is characterized by progressive hydrocephalus with a myelomeningocele in newborns. There is a failure of pontine flexure during embryogenesis, which results in elongation of 4th ventricle; kinking of brainstem and breaking of quadrigeminal plate (tectum); along with displacement of inferior vermis, pons and medulla into cervical canal. This causes widening of cervical canal (syringomyelia).
3. Type III : Usually associated with occipital encephalocele and causes abundant neurological deficit.
4. Type IV : Characterised by lack of cerebellar development and usually not compatible with life.

1454. Regarding Dandy-Walker syndrome, all are seen except-

- a) Hydrocephalus
- b) Arachnoid cyst
- c) Posterior fossa cyst
- d) Cerebellar vermis deficiency

Correct Answer - B

Ans. is 'b' i.e., Arachnoid cyst

Dandy-walker malformation

o The Dandy-Walker malformation consists of a cystic expansion of the 4th ventricle in the posterior fossa and midline cerebellar hypoplasia.

o There is : ?

o Hydrocephalus (90% of cases)

o Agenesis of the cerebellar vermis and corpus callosum.

o Rapid increase in head size with prominent occiput.

1455. Grimace with APGAR score -

a) 0

b) 1

c) 2

d) 3

Correct Answer - B

Ans. is `b i.e., 1

APGAR SCORES EXPLAINED				
	Indicator	0 Points	1 Point	2 Points
A	Appearance (skin color)	Blue; Pale	Pink Body; Blue Extremities	Pink
P	Pulse	Absent	Below 100 bpm	Over 100 bpm
G	Grimace (reflex irritability)	Floppy	Minimal Response to Stimulation	Prompt Response to Stimulation
A	Activity (muscle tone)	Absent	Flexed Arms and Legs	Active
R	Respiration	Absent	Slow and Irregular	Vigorous Cry

1456. A child of less than one year with asthma treatment -

- a) MDI with Spacer
- b) MDI with Mask
- c) MDI with Spacer with Mask
- d) MPI with mask

Correct Answer - C

Answer- C. MDI with Spacer with Mask

MDI alone require better press and breath co-ordination so used above 12 years of age.

MDI with spacer overcome breath co-ordination so used above 4 years of age.

MDI with spacer with mask can be used successfully in children below 4 years of age.

1457. Treatment of bronchiolitis includes all except -

- a) Macrolides
- b) Humid oxygen
- c) Bronchodilator
- d) All of above

Correct Answer - A

Answer- A. Macrolides

Bronchiolitis is predominantly a viral disease.

1. RSV (most common)
2. Parainfluenza virus 3, 1, 2
3. Adenovirus
4. Influenza virus
5. Mycoplasma pneumoniae

Treatment is mainly symptomatic which includes humid atmosphere, bronchodilators (n-agonist, ipratromium, epinephrine nebulized) and antipyretics. Though antibiotics have no role, ribavarin, when indicated, is the antiviral agent of choice.

1458. In child, foreign body in lung -

a) Rigid bronchoscopy

b) Chest x-ray

c) Flexible endoscopy

d) Direct laryngoscopy

Correct Answer - A

Ans. is 'a' i.e., Rigid bronchoscopy

o Treatment of choice is removal of foreign body by rigid bronchoscope with appropriate antibiotics.

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1459. In which disease, symptoms improve with crying -

a) Tetralogy of fallot

b) Choanal atresia

c) Bronchial asthma

d) All of above

Correct Answer - B

Ans. is 'b' i.e., Choanal atresia

o Bilateral choanal atresia is a very serious life-threatening condition because the baby is unable to breath directly after birth as neonates are obligate nasal breathers.

o In some cases, this may present as cyanosis while the baby is feeding because the oral air passages are blocked by the tongue.

o *The cyanosis may improve when the baby cries, as the oral airway is used at this time.*

o These babies may require airway resuscitation soon after birth.

1460. Most common pulmonary tumor in children is -

- a) Carcinoid
- b) Small cell carcinoma
- c) Adeno carcinoma
- d) Squamous cell carcinoma

Correct Answer - A

Answer- A. Carcinoid

The most common tumor types are carcinoid , inflammatory myofibroblastic tumor , and pleuropulmonary blastoma

Rare pediatric lung tumors including small cell carcinoma, adenocarcinoma, and pulmonary capillary hemangiomatosis were also seen.

1461. All of the following are true about Kernicterus EXCEPT:

- a) Kernicterus is due to Unconjugated Hyperbilirubinemia
- b) Yellowish staining of Basal Ganglia is seen
- c) Prematurity is a risk factor
- d) Not associated with increased morbidity

Correct Answer - D

Not associated with increased morbidity REF: Nelson 17th edition page 687

KERNICTERUS OR BILIRUBIN ENCEPHALOPATHY:

- Kernicterus, or bilirubin encephalopathy, is a neurologic syndrome resulting from the deposition of unconjugated bilirubin in the basal ganglia and brainstem nuclei.
- The greatest risk associated with hyperbilirubinemia is the development of kernicterus (bilirubin encephalopathy) at high indirect serum bilirubin levels.
- The level of serum bilirubin associated with kernicterus is dependent in part on the cause of the jaundice. Kernicterus has developed when bilirubin levels exceed 30 mg/dL, although the range is wide (21-50 mg/dL).
- Its onset is usually in the 1st wk of life, but it may be delayed to the 2nd-3rd wk.
- Kernicterus develops at lower bilirubin levels in preterm infants and in the presence of asphyxia, intraventricular hemorrhage, hemolysis, or drugs that displace bilirubin from albumin. The exact serum bilirubin level that is harmful for VLBW infants is unclear. Kernicterus does occur in patients with breast milk jaundice but is very uncommon.

- The surface of the brain is usually pale yellow. On cutting, certain regions are characteristically stained yellow by unconjugated bilirubin
- Overt neurologic signs have a grave prognosis; 75% or more of such infants die, and 80% of affected survivors have bilateral choreoathetosis with involuntary muscle spasms. Mental retardation, deafness, and spastic quadriplegia are common. Infants at risk should have screening hearing tests.

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1462. Most common cause of per rectal bleeding in infant is -

a) Anal fissure

b) Rectal polyp

c) Intussusception

d) Hypertension

Correct Answer - A

Answer- A. Anal fissure

Anal fissures are the most common cause of rectal bleeding in infants and children.

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1463. Most common anomaly of upper urogenital tract is -

a) Uretero pelvic junction stenosis

b) Ectopic urethral opening

c) Ureterocele

d) Ectopic ureter

Correct Answer - A

Answer- A. Uretero pelvic junction stenosis

Most common cause of urinary tract obstruction in children -

Posterior urethral valves.

Most common cause of lower urinary tract obstruction in children ->

Posterior urethral valves.

Most common cause of upper urinary tract obstruction in children 4

PUJ obstruction.

1464. Which of the following is true of Wilson's disease all except -

- a) Autosomal recessive
- b) Serum ceruloplasmin level < 20 mg/dl
- c) Urinary copper excretion < 100 microgram/c11
- d) Zinc acetate is used as maintenance therapy

Correct Answer - C

Urinary copper excretion <100 microgram/di [Ref: Harrison 17th/e p. 2450, 2449]

- Symptomatic pts. of Wilson disease invariably have urine copper levels > 100 pg per day.
- Wilson disease is an autosomal recessive disorder caused by mutation in the ATP 7B gene (a copper transporting ATPase)
- Diagnosis - The gold standard for diagnosis is Liver biopsy with quantitative copper assayQ.
- Other diagnostic tests used are ?
 - Serum ceruloplasmin levelQ
 - KF rings(2
 - Urine copper excretiono
 - DNA Helpful-ye analysisQ
- Serum copper values have no diagnostic value, since they may be low, normal or elevated depending upon the stage of evolution of disease.

Table : Useful Diagnostic Tests for Wilson Disease

Test	Normal Value	Wilson Disease
	180-350	

Serum	mg/L	
ceruloplasmin	(18-35 mg/dl)	• Low in 85% • Present in 99% - If neurologic or psychiatric symptoms present.
KF rings	Absent	• Present in 30-50% - in hepatic presentation and presymptomatic state • Urinary copper excretion is increased
24-h urine Cu	0.3-0.8 mmol	- >1.6 mmol (>100mg) in symptomatic patients • 0.9 to > mmol (60 to > 100 mg) - in presymptomatic patients
Liver Cu	0.3 — 0.8 mmol/g	• Liver copper is increased • > 3.1 mmol (200 tissue mg)
Haplotype analysis	0 Matches	2 Matches
<u>Treatment</u>		
• <u>Zinc is the treatment of choice for Wilson disease.</u> • It produces a negative copper balance - By blocking intestinal absorption of copper - By inducing hepatic metallothionein synthesis which sequesters additional toxic copper.		
Table : Recommended Anticopper Treatments for Wilson Disease		
Disease Status	First Choice	Second Choice

Initial hepatic manifestations		
• Hepatitis or cirrhosis without decompensation		Trientine
• Hepatitis or Cirrhosis with decompensation	Zinc	Penicillamine and zinc
- Mild	Trientine and zinc	Hepatic transplantation
- Moderate	Hepatic	Trientine and
- Severe	transplantation	zinc
Initial neurologic/psychiatric	Tetraioinolybdate and zinc	Trientine and zinc
Maintenance therapy	Zinc	Trientine
Presymptomatic therapy	Zinc	Trientine
Pediatric	Zinc	Trientine
Pregnant	Zinc	Trientine

1465. Features of cystinuria are

- a) Impaired proximal tubular reabsorption of cystine
- b) Autosomal recessive
- c) Recurrent renal stone
- d) All of the above

Correct Answer - D

Answer- D. All of the above

Cystinuria

- **Biochemical Defect:** An autosomal recessive disorder that results in the formation of a defective amino acid transporter in the renal tubule and intestinal epithelial cells.
- **Pathophysiology:** The amino acid transporter is responsible for transporting cystine, ornithine, lysine, and arginine. Defective tubular reabsorption of these amino acids in the kidneys results in increased cysteine in the urine, which can precipitate and cause kidney stones.
- **Clinical Manifestations:** Cysteine kidney stones presenting with severe, intermittent flank pain and hematuria.
- **Lab findings:** Increased urinary excretion of cystine, ornithine, arginine, and lysine on urine amino acid chromatography; hematuria and cysteine crystals (hexagonal) on the cooling of acidified urine sediment.
- **Imaging:** Radiopaque kidney stones on CT scan. The most specific test is the cyanide–nitroprusside test

Treatment: Low-methionine diet; increased fluid intake; acetazolamide to alkalinize the urine. If this fails then patients are usually started on chelating therapy with penicillamine.

1466. Which of the following is best for transport of the newborn with maintainance of warm temperature ?

a) Kangaroo Mother Care (KMC)

b) Transport incubator

c) Thermanol box

d) Hot bottle

Correct Answer - A

Ans is 'a' i.e., Kangaroo Mother Care (KMC)

"Preferably mother should accompany and baby can be transported in KMC position. Even father can provide KMC during transport if mother can not accompany."

1467. Second degree consanguineous marriage, baby with diarrhoea, perianal diaper area redness -

a) Lactose intolerance

b) Shigella diarrhoea

c) Salmonella

d) Fungal

Correct Answer - A

Answer- A. Lactose intolerance

In Lactose intolerance, there is deficiency of enzyme lactase.

So No natural breakdown of lactose - a carbohydrate present in milk.

This causes diarrhoea.

Stool contains reducing sugar which causes perianal excoriation.

1468. Most common intra abdominal solid organ tumor in child is ?

a) Neuroblastoma

b) Rhabdomyoblastoma

c) Wilm's tumor

d) Hypernephroma

Correct Answer - A

Ans. is 'a' i.e., Neuro blastoma

- Most common abdominal cancer of childhood.
- Most common cancer of infancy.
- *Most common extracranial solid tumor of childhood* (most common solid tumor of childhood is brain tumor).

1469. On USG a mass was found in abdomen which was displacing the kidney laterally in 1 year old child -

a) Neuroblastoma

b) Nephroblastoma

c) RCC

d) All of the above

Correct Answer - A

Answer- A. Neuroblastoma

The commonest intra-abdominal tumor in first two years of life
Neuroblastoma

1470. In children most common posterior fossa tumour is:

a) Meningiomas

b) Astrocytoma

c) Medulloblastoma

d) Glioblastoma multiforme

Correct Answer - B

Answer is B (Astrocytoma):

Cerebellar Astrocytomas are the most common posterior fossa tumors in children.

Medulloblastoma are the second most common posterior fossa tumors in children and the most common malignant posterior fossa tumors in children.

Although CPDT and Nelson's textbook mention an equal incidence of cerebellar astrocytoma and medulloblastoma in the posterior fossa in children, most other standard textbooks mention cerebellar astrocytomas as the most common posterior fossa tumors in children.

1471. Drugs used in ALL in child are all except -

- a) Methotrexate
- b) Vincristine
- c) Vinblastine
- d) Cyclophosphamids

Correct Answer - C

Answer- C. Vinblastine

Treatment of ALL is divided into 4 stages. The total duration of treatment ranges between 2 and 2½ years.

1. Induction of remission

- Induction therapy is used to attain remission, i.e., to eradicate the leukemic cells from bone marrow.
- Drugs used are 4 Vincristine, Prednisolone, L - Asparaginase, Anthracycline. Duration of therapy is 4-6 weeks..

2. CNS therapy

- Most children with leukemia have subclinical CNS involvement at the time of diagnosis. Moreover, CNS acts as a sanctuary site where leukemic cells are protected from systemic chemotherapy because of blood brain barrier. So, treatment to keep leukemia cells from spreading to the CNS is often started with induction.
- Treatment include 4 Intrathecal methotrexate plus cranial radiation.

3. Intensification

- If the patient goes into remission, the next step is to intensify the therapy for a short period.
- Drugs used are 4 Methotrexate, L - Asparaginase, Etoposide, Cyclophosphamide, Cytarabine.

4. Maintenance therapy

- After consolidation, the patient is generally put on a maintenance therapy to maintain the remission state and prevent relapse.
- Drugs used are 4 6-mercaptopurine, Methotrexate, Prednisolone, Vincristine. Duration of maintenance therapy is 2-2.5 years.

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1472. 34 week primigravida punjabi khatri comes with history of consanguineous marriage, with history of repeated blood transfusion to her sibling since 8 months of age. The first diagnostic test is -

a) HPLC

b) Blood smear

c) Bone marrow

d) Hb electrophoresis

Correct Answer - B

Answer- B. Blood smear

Type of hemoglobin is detected by Hb electrophoresis.

In this case, Hb electrophoresis of the woman should be done. If she comes positive for abnormal hemoglobin, she should be counselled about termination of pregnancy.

1473. Male pseudohermaphroditism is seen in ?

- a) 5-a reductase deficiency
- b) 21 hydroxylase deficiency
- c) 17 hydroxylase deficiency
- d) a and c

Correct Answer - D

Ans. is 'a' i.e., 5-a reductase deficiency; 'c' i.e., 17 hydroxylase deficiency

Male pseudohermaphroditism

Genotype is XY

External genitalia are female

Causes of Male Pseudohermaphroditism

A. Defect in testicular differentiation

1. Deletion of short arm Y chromosome dysgenesis (MGD).

2. XY pure gonadal dysgenesis. male pseudohermaphroditism (DMP).

B. Defect in testicular hormone synthesis

1. Leydig cell aplasia

2. Inborn error of testosterone biosynthesis

i) 17-alpha hydroxylase deficiency
steroid dehydrogenase deficiency.

ii) 17-20 lyase deficiency
desmolase deficiency

iii) 17-ketosteroid reductase deficiency.

C. Defect in mullerian inhibiting hormone action

D. Defect in androgen action

3. Mixed gonadal

4. Dysgenetic

iv) 3 beta-hydroxy

v) 20-22

1. 5-alpha reductase deficiency syndrome	4. Reifenstein
2. Testicular feminization syndrome etiology	5. Undertermined
3. Incomplete testicular feminization syndrome	
<u>True hermaphroditism</u>	
Both ovarian and testicular tissues are present either in the same (ovotestis) or opposite gonads.	

1474. 3 beta hydroxysteroid dehydrogenase deficiency causes increase production of -

a) DHEA

b) Progesterone

c) Deoxycortisol

d) Estradiol

Correct Answer - A

Answer- A. DHEA

There is elevated level of pregnenolone, 17 α -OH pregnenolone DHEA and decreased level of progesterone, deoxycortisol and estradiol.

1475. Which of the following is caused by congenital 17 hydroxylase deficiency:

a) Hyperkalemia

b) Hermaphroditism

c) Hypertension

d) Virilism

Correct Answer - C

Hypertension

17 -hydroxylase (17 -OH) deficiency syndrome is a rare genetic disorder of steroid biosynthesis causing decreased production of glucocorticoids and sex steroids and increased synthesis of mineralocorticoid precursors. Reduced or absent levels of both gonadal and adrenal sex hormones result in sexual infantilism in 46, XX females and ambiguous genitalia in 46, XV males. Excessive mineralocorticoid activity produces varying degrees of hypertension Q and hypokalemia Q. Patients usually are diagnosed with this condition during an evaluation of delayed puberty. absent secondary sexual characteristics or primary amenorrhea.Q

1476. Features of hypothyroidism in infancy include the following except-

- a) Premature closure of posterior fontanelle
- b) Coarse facies
- c) Umbilical hernia
- d) Constipation

Correct Answer - A

Ans. is 'a' i.e., Premature closure of posterior fontanelle
o There is delayed closure of posterior fontanelle.

1477. Gonads to testes differentiation -

a) SRY gene

b) WNT-4 gene

c) DAX1 gene

d) None

Correct Answer - A

Ans. is 'a' i.e., SRY gene

o 46 XX chromosome with genetic factor such as *DAX1* and signalling molecule *WNT-4* are necessary for development of ovary.
o Y chromosome contains SRY gene which differentiates gonads to testes.

1478. 2-5 year old child with DM, target HbA_{1c} is -

a) < 8 %

b) < 7 %

c) < 9 %

d) < 6 %

Correct Answer - C

Answer- C. < 9 %

In children below 5 year of age, target HBA1C is 7.5 - 9%.

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1479. The sodium content of ReSoMal (rehydration solution for malnourished children) is -

a) 90 mmol/L

b) 60 mmol/L

c) 45 mmol/L

d) 30 mmol/L

Correct Answer - C

Ans. is 'c' i.e., 45 mmol/L

	Old WHO ORS	Standard (hypo-osmolar) WHO ORS	ReSoMal
Osmolarity (mOsm/L)	311	245	300
Sodium Mmol/l	90	75	45
Potassium Mmol/l	20	20	40
Chloride Mmol/l	80	65	76
Glucose Mmol/l	111	75	125

1480. Prenatal diagnosis of Down Syndrome is by -

- a) Karyo typing
- b) Triple test
- c) Fetal ultrasonography
- d) All of above

Correct Answer - D

Answer- D. All of above

Following methods are used :

1. Triple test : It includes (i) Unconjugated estrogen (estriol) : decreased; (ii) Maternal serum alpha-feto protein (MSAFP): decreased; and (iii) hCG : increased (Note : All these three markers are decreased in Edward syndrome)
2. New markers : These are (i) Increased inhibin A in maternal blood; and (ii) Decreased PAPA (pregnancy associated plasma protein).
3. USG : It shows : (i) Increased nuchal translucency (increased nuchal fold thickness) in first trimester; (ii) Ductus venous flow reversed; and (iii) Nasal bone hypoplasia.
4. Karyotyping : It can be done by chorionic villus sampling at 10-12 weeks or amniocentesis at 16-18 weeks.

1481. 5 year old child develop fever and rash on first day and rash disappear, after few days develop child develop ataxia. Most probable diagnosis is -

a) Measles

b) Fifth disease

c) Chicken pox

d) Rocky mountain spotted fever

Correct Answer - A

Answer- A. Measles

Information :

1. Rash on 1st day
2. Complication like ataxia
3. Diagnosis is chicken pox.

1482. Major sign for AIDS surveillance in WHO case definition ?

a) > 10% weight loss

b) Cough > 1 month

c) Generalized lymphadenopathy

d) Disseminated Herpes

Correct Answer - A

Ans. is 'a' i.e., > 10% weight loss

WHO case definition for AIDS surveillance

- For the purpose of AIDS surveillance an adult or adolescent (six years of age) is considered to have AIDS if at least *2 of the following major signs* are present in combination with *one minor sign*.

Major Signs

- Weight loss > 10 % of body weight
- Chronic diarrhoea for more than 1 month
- Prolonged fever for more than 1 month

Minor signs

- Persistent cough for more than one month
- Generalized pruritic dermatitis
- History of herpes zoster
- Chronic progressive or disseminated herpes simplex infection
- Generalized lymphadenopathy
- Oropharyngeal Candidiasis.

Expanded WHO case definition for AIDS surveillance

- For the purpose of surveillance on adult or adolescent (>12 years of age) is considered to have AIDS if a test for
- HIV antibody gives a positive result and one or more of the following conditions are present :

- >10% body weight loss or cachexia, with diarrhoea or fever or both, for at least 1 month, not known to be due to a condition unrelated to HIV infection.

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1483. MC symptom of AIDS in infant is -

a) GI infection

b) Persistent cough

c) Failure to thrive

d) Lymphadenopathy

Correct Answer - A

Answer- A. GI infection

Features in older children -

- Growth failure
- Fever
- Diarrhea
- Secondary infection

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1484. Baby borne to patient suspected of chlamydial infection sample to be taken for diagnosis -

a) Conjunctival

b) Urethral

c) Urine sample

d) Blood

Correct Answer - A

Answer- A. Conjunctival

About 70% of baby born to positive chlamydal infection develop conjunctivitis at day 5 of life so sample taken for diagnosis is conjunctival.

Chlamydal infection is most common cause of conjunctivitis in newborn.

Chlamydal infection causes watering discharge form eye (unlike purulent discharge in Gonococcal).

[Ref Debbie-Metal Newborn & Infant Nursing Review (NAINR 2004)]

1485. Features of Refsum disease are all except -

a) Ataxia

b) CCF

c) Ichthiosis

d) Retinitis pigmentosa

Correct Answer - B

Answer- B. CCF

Peroxisomal disorder.

Defective enzyme - phytonoyl CoA oxidase.

Clinical feature includes

1. Impaired vision (retinitis pigmentosa).
2. Ichthyosis
3. Peripheral neuropathy.
4. Ataxia

1486. In which one of the following conditions is gas under diaphragm not seen-

- a) Perforated duodenal ulcer
- b) Typhoid perforation
- c) After laparotomy
- d) Spontaneous rupture of oesophagus

Correct Answer - D

Ans. is 'd' i.e., Spontaneous rupture of oesophagus

- Chilaiditi's syndrome : Condition characterised by inter position of small or large bowel between liver and right diaphragm. Radiologically it gives gas under diaphragm.
- Iatrogenic pneumoperitoneum : Certain procedure like peritoneal dialysis, Iatrogenically air pushed before putting PD cannula to avoid injury of viscera in such case gas under diaphragm can be seen.
- All cases when intestine or viscera perforate we can get gas under diaphragm.

1487. Young child with laughing spells. Diagnosis -

a) Hypothalamic hamartoma

b) Tetralogy of fallot

c) Nitrous oxide poisoning

d) None of the above

Correct Answer - A

Answer- A. Hypothalamic hamartoma

Laughing spells (also know as Gelastic seizure)

Gelastic seizures are epileptic events characterized by bouts of laughter. Laughter-like vocalization is usually combined with facial contraction in the form of a smile. Autonomic features such as flushing, tachycardia, and altered respiration are widely recognized. Gelastic seizures have been associated classically to hypothalamic hamartomas.

1488. Grisel syndrome all are true except

- a) Post-adenoidectomy
- b) Conservation treatment
- c) Inflammation of cervical spine ligaments
- d) No need for neurosurgeon

Correct Answer - D

Ans. d. No need for neurosurgeon

- Grisel Syndrome:
- Non-traumatic atlanto-axial subluxation may occur secondary to any inflammatory process in the upper neck
- It is described following tonsillectomy and adenoidectomy
- Conservation treatment: Cervical immobilization, Analgesia and Antibiotics to reduce the risk of neurological deficit

Grisel Syndrome

- Non-traumatic atlanto-axial subluxation may occur secondary to any inflammatory process in the upper neck^Q
- Due infection in the peri-odontoid vascular plexus^Q that drains the region, bringing about paraspinal ligament laxity
- Described following tonsillectomy and adenoidectomy^Q
- It maybe associated with overuse of diathermy either for removal of adenoid or following curettage^Q, when used for hemostasis.
- Children with Down syndrome^o have atlanto-axial instability

Treatment:

- Cervical immobilization^Q
- Analgesia^Q
- Antibiotics^Q to reduce the risk of neurological deficit

1489. Thirteen pair of Ribs are seen in ?

a) Down syndrome

b) Holt oram

c) Turner

d) Fibrous dysplasia

Correct Answer - A

Answer- A. Down syndrome

7 pair Trisomy 21, cleidocranial dysplasia

11 pair Trisomy 18,21

13 pair Trisomy 21

14 pair VATER Syndrome

[Ref Abnormal number of fetal ribs in USG by Liat Gindes et.al.]

1490. Articular cartilage, true is ?

- a) Very vascular structure
- b) Surrounded by thick perichondrium
- c) Has no nerve supply
- d) Fibrocartilage

Correct Answer - C

Ans. is 'c' i.e., Has no nerve supply

Articular cartilage

- The articulating surfaces of a synovial joint are covered by articular cartilage.
- The articular cartilage has following features :-
 1. It is a hyaline cartilage
 2. It is avascular
 3. It is non-nervous (no nerve supply)
 4. Does not have perichondrium
- Articular cartilage lacks the ability to properly repair and regenerate itself. The regeneration capacity of cartilage is limited due to its isolation from systemic regulation, and its lack of vasculature and nerve supply.

1491. In Articular cartilage, most active chondrocytes are seen in ?

a) Zone 1

b) Zone 2

c) Zone 3

d) Zone 4

Correct Answer - C

Ans. is 'c' i.e., Zone 3

- There are four zones (layers) of articular cartilage from the articular surface to subchondral bone.
- .. **Superficial zone (Zone-1)**
 - It is the thinnest zone.
 - It consists of two layers : (i) A sheet of densely packed collagen with little polysaccharide and to cells, covers the joint surface, and (ii) flattened ellipsoid-shaped chondrocytes, with their major axis parallel to joint surface.
- 2. **Transition zone (Zone-2)**
 - Composition is intermediate between superficial zone and middle zone.
- 3. **Middle zone or radial zone or deep zone (Zone-3)**
 - The chondrocytes are spheroidal in shape with their major axis perpendicular to joint surface.
 - Chondrocytes are most active synthetically in this zone.
 - This zone contains the largest diameter collagen fibrils, the highest concentration of proteoglycans and the lowest concentration of water.
- 4. **Calcified cartilage zone (Zone-4)**
 - It separates the middle zone from subchondral bone.
 - The cells are small with small amount of endoplasmic reticulum and

golgi apparatus with very little metabolic **activity.**

- Cells are surrounded by calcified cartilage.

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1492. Flexor tendon graft repair graft is taken from ?

a) Plantaris

b) Palmaris longus

c) Extensor digitorum

d) Extensor indicis

Correct Answer - D

Ans. is 'd' i.e., Extensor indicis

- Beside covering the bone and sharing some of its blood supply with the bone, periosteum (particularly cambium layer) also produces bone when it is stimulated.
- Practically anything that breaks, tears, stretches, inflames or even touches the periosteum, stimulates the reactive bone formation by periosteum.
- This is called periosteal reaction.

Differential Diagnosis of Periosteal Reaction

Arthritis

Psoriatic arthritis

Reactive arthritis

Metabolic

Hypertrophic pulmonary osteoarthropathy

Thyroid acropathy

Congenital

Pachydermoperiostosis

Periosteal reaction of newborn

Trauma

Stress fracture

Fracture

Drugs Fluorosis

Hypervitaminosis A

Prostaglandins

Tumors Osteosarcoma

Ewing's sarcoma

Chondroblastoma

Eosinophilic granuloma

Osteoid osteoma

Leukemia and lymphoma

Infection

Genetic

Caffey disease

Vascular

Venous stasis

- **Neuropathic arthropathy is also associated with periosteal reaction.**

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1493. Intramembranous ossification is seen in which bones?

a) Pelvis

b) Long bones

c) Maxilla

d) None

Correct Answer - C

Ans. is 'c' i.e., Maxilla

Bone formation

- Bone formation (ossification) occurs by two methods : 1) Endochondral ossification, 2) Intramembranous ossification.
- In both, mesenchymal connective tissue is replaced by bone but by different mechanics.
- **Endochondral ossification**
 - 1. This type of ossification involves the replacement of a cartilaginous model by bone.
 - 2. Bone formation takes place in pre-existing cartilage.
 - 3. Mesenchymal tissue first forms cartilage which is latter ossified to become bone.
 - 4. Most of the long bones develop by endochondral ossification.
 - 5. Other bones are vertebrae, pelvis, skull base bones.
 - 6. Interstitial growth of long bone at epiphyseal cartilage occurs by endochondral ossification.
- **Intramembranous ossification**
 - 1. Mesenchymal cells give rise to osteogenic cells which develop into osteoblasts.
 - 2. Osteoblasts begin to lay down osteoid which latter mineralised to form bone

- 3. Thus, there is direct formation of bone from mesenchymal tissue (with no cartilage formation as occurs in Endochondral ossification).
- 4. This type of ossification transforms membrane into bone.
- 5. The bone formation occurs at the periphery with layers of bone being laid down analogous to the ring-like diameter of a tree.
- 6. This type of growth is called appositional growth.
- 7. Skull vault, maxilla, most of the mandible and clavicle are formed by intramembranous ossification.

1494. Pion fracture is

- a) Bimalleolar
- b) Trimalleolar
- c) Distal femur Intraarticular
- d) Distal tibia Intraarticular

Correct Answer - D

Answer- D. Distal tibia Intraarticular

Pilon fracture- Comminuted intra-articular fracture of distal tibial end

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1495. Dignostic sign of a fracture-

a) Abnormal mobility at fracture site

b) Pain at the fracture site

c) Tenderness

d) Swelling

Correct Answer - A

Ans. is 'a' i.e., Abnormal mobility at fracture site

1. Unfailing signs (diagnostic or pathognomonic) -

- Abnormal mobility
- Crepitus
- Tenderness

2. Reliable signs

- Shortening
- Bruise

3. Important signs

- Swelling
- Loss of function
- Deformity
- Blisters

4. Late or inconsistent signs

- Ecchymosis
- Swelling due to callus

1496. Which of the following is not a diarthrosis ?

- a) Elbow joint
- b) Interphalangeal joint
- c) Skull sutures
- d) Hip joint

Correct Answer - C

Ans. is 'c' i.e., Skull sutures

Functional classification of joints (movement)

- Joints can also be classified functionally according to the type and degree of movement they allow:
 1. Synarthrosis - Permits little or no mobility. Most synarthrosis joints are fibrous joints (e.g., skull sutures).
 2. Amphiarthrosis - Permits slight mobility. Most amphiarthrosis joints are cartilaginous joints (e.g., intervertebral discs).
 3. Diarthrosis - Freely movable. All diarthrosis joints are synovial joints (e.g., shoulder, hip, elbow, knee, etc.), and the terms "diarthrosis" and "synovial joint" are considered equivalent by Terminologia Anatomica

1497. The father of joint replacement surgery is ?

a) Manning

b) Girdlestone

c) Charnley

d) Ponseti

Correct Answer - C

Ans. is 'c' i.e., Charnley

- **Father of the modern hip replacement: Professor Sir John Charnley (1911-82).**
- Professor Sir John Charnley was a British orthopaedic surgeon, inventor and skilled craftsman. He is best known for his development of the first truly successful operation for total arthroplasty of the hip, the low-friction arthroplasty. As well as publishing significant works on closed fracture management and compression arthrodesis, he can also be accredited with pioneering work in the development of clean-air operating conditions and body-exhaust suits.

1498. Most common type of shoulder dislocation is ?

a) Preglenoid

b) Subcoracoid

c) Subclavicular

d) Posterior

Correct Answer - A

Ans. is 'a' i.e., Preglenoid

- Anterior dislocation of the shoulder is the most common type of shoulder dislocation. Head of the humerus comes out of the glenoid cavity and lies anteriorly. Anterior dislocation of shoulder could be :?
 1. Preglenoid - It is the most common type of anterior dislocation and head lies in front of glenoid.
 2. Subcoracoid - The head lies below the coracoid process.
 3. Subclavicular (infraclavicular) - The head lies below the clavicle.
 4. Intrathoracic - It is very rare.

1499. Painful arc syndrome is caused by impingement of ?

a) Sub acromial bursa

b) Sub deltoid bursa

c) Rotator cuff tendon

d) Biceps tendon

Correct Answer - C

Ans. is 'c' i.e., Rotator cuff tendon

Painful arc syndrome

- Pain in the shoulder and upper arm during mid range of glenohumeral abduction.
- Causes - supraspinatus tendon tear or tendinitis, subacromial bursitis, fracture of greater tuberosity.
- The space between the upper end of humerus and the acromion gets compromised so that during mid abduction the tendon of rotator cuff gets nipped between the greater tuberosity and acromion.

1500. In extension type of supracondylar fracture, the usual displacement

a) Anterolateral

b) Anterolateral

c) Posteromedial

d) Posterolateral

Correct Answer - D

Ans. is 'd' i.e., Posterolateral

Types of supracondylar fracture

- Supracondylar fracture is broadly classified into *extension type* and *flexion type*. 1. Extension type
- It is the *most common type* (97 - 99%).
- *Distal fragment is extended (tilted backward/posteriorly)* in relation to proximal fragment.
- Occurs due to hyperextension injury after fall on outstretched hands.
- Generally, displacement of distal fragment may be : ?
- Posteromedial (70-80%)
- Posterolateral (20-30%)

2. Flexion type

- It is less common type (1-3 %)
- Distal fragment is flexed (tilted forward/anteriorly) in relation to proximal fragments.
- The mechanism of injury generally is believed to be a fall directly onto the elbow rather than a fall on outstretched hand.
- As the extension type fracture is more common (97 - 99%), the most common elbow injury in children is extension type of supracondylar fracture.

1501. True Supracondylar fracture of femur?

a) Type A

b) Type B

c) Type C

d) Type D

Correct Answer - A

Ans. is 'a' i.e., Type A

A useful classification is from the AO group: type A fractures have no articular splits and are truly 'supra- condylar'; type B fractures are simply shear fractures of one of the condyles; and type C fractures have supra- condylar and intercondylar fissures

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1502. Late complication of elbow dislocation

a) Median nerve injury

b) Brachial artery injury

c) Myositis ossificans

d) All of the above

Correct Answer - C

Answer- C. Myositis ossificans

Late complications

- Stiffness
- Myositis ossificans
- Unreduced dislocation
- Recurrent dislocation

**1503. Complications of elbow dislocation are
all EXCEPT:
March 2004**

a) Vascular injury

b) Median nerve injury

c) Myositis ossificans

d) Radial nerve injury

Correct Answer - D

Ans. d i.e. Radial nerve injury

1) Early complications

- *Vascular injury* :- Brachial artery may injured. It may result in compartment syndrome and Volkmann's ischemic contracture.
- *Nerve injury* :- Median and ulnar nerve injury

2. Late complications

- . Stiffness ? Myositis ossificans
- . Unreduced dislocation ? Recurrent dislocation

1504. Fracture of proximal forearm cast position is ?

- a) Pronated flexion
- b) Neutral position
- c) Supinated position
- d) Position does not matter

Correct Answer - C

Ans. is 'c' i.e., Supinated position

- *Fracture proximal third - supination of forearm*
- *Fracture middle third - mid pronation offorearm*
- *Fracture distal third - pronation offorearm*

1505. Essex lopresti lesion in upper limb-

- a) Injury to interosseous membrane
- b) Radial head and DER fracture
- c) Radial shaft
- d) Radial shaft and radio-ulnar joint fracture

Correct Answer - A

Ans. is 'a' i.e., Injury to interosseous membrane

The Essex-Lopresti fracture is a fracture of the radial head with concomitant dislocation of the distal radio-ulnar joint with disruption of the interosseous membrane

1506. Barton's fracture is ?

- a) Fracture distal end humerus
- b) Extra-articular fracture distal end radius
- c) Intra-articular fracture distal end radius
- d) Intra-articular fracture distal end radius with carpal bone subluxation

Correct Answer - A

Ans. is 'd' i.e., Intra-articular fracture distal end radius with carpal bone subluxation

Barton's fracture

- Barton's fracture is an intra-articular fracture of distal radius with subluxation of carpals.
- When carpals subluxation occurs anteriorly (volar), it is called volar Barton's fracture. It is the commonest type.
- When carpals subluxate posteriorly (Dorsal), it is called Dorsal Barton's fracture.
- The Barton's fracture is difficult to manage by conservative methods : reduction is often imperfect and tends to be unstable, so that redisplacement often occurs.
- Therefore, often internal fixation by small buttress plating is recommended.

1507. Madelung's deformity involves -

a) Humerus

b) Proximal ulna

c) Distal radius

d) Carpals

Correct Answer - C

Ans. is 'c' i.e., Distal radius

Madelung's deformity

- Madelung's deformity is a congenital disorder that affects *growth of distal radius*.
- The primary defect is failure of normal growth of medial and palmar halves of the distal radial physis, leading to curvature in an medial (ulnar) and palmar direction.
- The ulna is relatively long and becomes prominent dorsally.
- The carpus (carpal bones) sinks, along with the medial (ulnar) half of the distal radial articular surface, into the gaps between the two forearm bones.

1508. Game keepers thumb is ?

- a) Thumb metacarpophalangeal joint ulnar collateral ligament rupture
- b) Thumb metacarpophalangeal joint radial collateral ligament rupture
- c) Thumb interphalangeal joint ulnar collateral ligament rupture
- d) Thumb interphalangeal joint radial collateral ligament rupture

Correct Answer - A

Ans. is 'a' i.e., Thumb metacarpophalangeal joint ulnar collateral ligament rupture

- Injury to the thumb metacarpophalangeal joint ulnar collateral ligament is commonly referred to as gamekeeper thumb or skier's thumb, although the original "gamekeeper" description (Campbell, 1955) referred to an attritional ulnar collateral ligament injury.
- Snow skiing accidents and falls on an outstretched hand with forceful radial and palmar abduction of the thumb are the usual causes.

1509. Garden spade deformity is seen in ?

a) Barton's fracture

b) Colle's fracture

c) Smith's fracture

d) Bennet's fracture

Correct Answer - C

Ans. is 'c' i.e., Smith's fracture

Smith fracture (Reverse colle's fracture)

- It is a fracture of distal third of radius with palmar displacement. Hence, it is called as reverse colles fracture (In colles fracture there is dorsal displacement).
- It is less common than colles fracture and is caused by fall on the back of hand.
- The deformity is opposite to that of colle's fracture and is called the 'garden spade deformity'.
- Treatment is closed reduction and immobilization in cast with forearm in supination and wrist in extension. o Percutaneous pinning may be done in unstable fractures.

1510. Fracture neck femur cause of non-union?

- a) Injury to blood supply with shearing stress
- b) Poor nutrition of the patient
- c) Smoking
- d) Old age and osteoporosis

Correct Answer - A

Ans. is 'a' i.e., Injury to blood supply with shearing stress

- **Causes of non-union in fracture neck of femur are :?**

1. Fracture morphology - high fracture angle and increased shear.
2. Displaced fracture grade 3/4.
3. Fracture comminution.
4. Inadequate reduction and stability of fixation.
5. Poor bone quality.
6. Injury to vascularity- direct and tamponade effect.
7. Absence of cambium layer in periosteum.
8. Factors in synovial fluid which inhibit the callus formation.
9. Lack of hematoma.
10. Washing away and dilution of osteogenic factors.

1511. True about proximal fragment in supratrochantric fracture is ?

- a) Flexion
- b) Abduction
- c) External rotation
- d) All the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Deformity in cases of fracture subtrochanteric femur

- The proximal femur is surrounded by very large and powerful muscles.
- In the case of a fracture, their spatial arrangement, combined with their origin and insertion, results in a very characteristic deformity.
- The proximal fragment, as a result of contraction of the abductors, the external rotators, and the iliopsoas muscle, is flexed, abducted, and externally rotated.
- The adductors cause the shaft to be adducted, and the force of gravity causes the distal fragment to fall into some external rotation.
- All the muscles that span the fracture combine to cause shortening.
- Thus, the resultant deformity is one of an anterior and lateral bowing of the proximal shaft, combined with considerable shortening and variable degrees of external rotation.

1512. Bulge sign in knee joint is seen after how much fluid accumulation ?

a) 100ml

b) 400ml

c) 200ml

d) <30 ml

Correct Answer - D

Ans. is i.e., < 30 ml

- The bulge test is used to determine the presence of fluid in the knee joint. It is useful when only a little fluid is present in the joint.
- The suprapatellar bursa is first emptied of fluid by squeezing distally from about 15 cm above the patella. The medial compartment of the knee joint is emptied by pressing on the side of the joint with the free hand. The hand is then lifted away and then the lateral side is sharply compressed.
- If the test is positive, a ripple is seen on the flattened, medial surface.
- The test is negative if the effusion is tense - up to 120 ml.
- The bulge test is used to determine minimal fluid in the knee joint. It can detect as little as 4 - 6 ml of fluid in the knee joint.

1513. Block vertebrae are seen in ?

a) Pagets disease

b) Leukemia

c) TB

d) Klippel - Feil syndrome

Correct Answer - D

Ans. is i.e., Klippel - Feil syndrome

- A block vertebra is a type of vertebral anomaly where there is a failure of separation of two or more adjacent vertebral bodies
- Associations
 - .. There is a frequent association with hemivertebrae / absent vertebra above or below block level, posterior element fusion
 - 2. Fusion of multiple cervical vertebral bodies is also seen in Klippel-Feil syndrome and VACTERL anomaly.

1514. Common causes of vertebra plana

- a) TB
- b) Eosinophilic granuloma
- c) Metastasis
- d) All of the above

Correct Answer - A

Ans. is 'd' i.e., All of the above

Vertebra plana

- This term is used to describe uniform collapse of a vertebral body into a thin, flat disc. The most common cause is eosinophilic granuloma, with the thoracic vertebrae most frequently affected. Causes are :?
 1. Histocytosis - X (Eosinophilic granuloma)
 2. Leukemia
 3. TB
 4. Metastasis, Multiple myeloma, Ewing's sarcoma, lymphoma
 5. Osteochondritis of vertebral body (Calve's disease)
 6. Hemangioma
 7. Trauma
 8. Steroids

1515. DISC prolapse is common at all site except ?

a) L4 - L5

b) L5 - S1

c) C6 - C7

d) T3 - T4

Correct Answer - D

Ans. is 'd' i.e., **T3 - T4**

- Herniation of intervertebral disc is a common cause of combined back pain and sciatica (Pain in back with radiation to lower limb).
- Prolapsed intervertebral disc is often precipitated by injury, but it may also occur in the absence of any remembered injury.
- The disc between L_c and S_p and between **L4** and **L5** are those most often affected (80%).
- Lower cervical region (C's - C6 and C6_7) is affected in 19-20%.

1516. Hangman's fracture is ?

- a) Subluxation of C5 over C6
- b) Fracture dislocation of C2
- c) Fracture dislocation of ankle joint
- d) Fracture of odontoid

Correct Answer - B

Ans. is 'b' i.e., Fracture dislocation of C2

Hangman's fracture

- Hangman's fracture is bilateral fracture of the pars interarticularis of axis (C₂) with traumatic spondylolisthesis of axis (C₂) over C₃ vertebrae. Thus Hangman's fracture is not simply a fracture, but fracture dislocation of axis (C2).
- The mechanism of injury is extension with distraction (in true, judicial hangman's fracture) and hyper-extension, axial compression & flexion (in civilian injuries, which are now more common).
- It is second most common type of Axis (C₂) fracture, second only to odontoid fractures.
- Fatalities are common, However, neurological deficit is unusual as the fracture of posterior arch decompress the spinal cord.
- Most of the fatalities occur at the scene of injury, acute post admission mortality is low.
- Successful healing of C₂ traumatic spondylolisthesis is reported to approach 95%. This is most commonly achieved with non-operative measures, even in the presence of displacement of pars interarticularis.
- Undisplaced fractures are treated in a semi-rigid orthosis, and displaced fracture are closed reduced & treated with halo-vest.

- Occasionally, the hangman's fracture is associated with a C2/3 facet dislocation. This is a severely unstable injury; open reduction and stabilization is required.

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1517. Most common cause of kyphotic deformity ?

a) Trauma

b) Osteoporosis

c) Ankylosing spondylitis

d) Rickets

Correct Answer - B

Ans. is 'b' i.e., Osteoporosis

Kyphosis

- Kyphotic deformities are characterized by an increased dorsal curvature in the sagittal plane of spinal alignment.
- Postural kyphosis (Postural round back) and Scheuermann's disease are the most common causes of kyphosis, particularly in adolescents.
- Most common cause in older persons is osteoporosis.
- Other common causes are tuberculosis of the vertebral bodies, ankylosing spondylitis, rickets, cancers and spina bifida.
- There are three types of kyphotic deformities :
 1. Knuckle - Prominence of one spinous process
 2. Gibbus - Prominence of two or three spinous processes
 3. Kyphus ---> Diffuse rounding of the vertebral column

1518. Most common nerve used for nerve conduction study in H reflex ?

a) Median nerve

b) Ulnar nerve

c) Tibial nerve

d) Peroneal nerve

Correct Answer - C

Ans. is 'c' i.e., Tibial nerve

- It is recorded over the soleus or gastrocnemius muscles.
- It is used most
- The H reflex is basically an electrophysiologically recorded Achilles tendon stretch reflex. o It is performed by stimulating the tibial nerve in popliteal fossa.
- It is commonly used to evaluate S₁ radiculopathy or to distinguish it from an L₅ radiculopathy.

1519. A person is not able to extend his metacarpophalangeal joint. Injury to which of the following nerve result in this?

a) Ulnar nerve

b) Radial nerve injury

c) Median nerve injury

d) Post. Interosseous nerve injury

Correct Answer - D

Damage to posterior interosseous nerve result in inability to extend the fingers at the metacarpophalangeal joints and radial deviation of the wrist on wrist extension caused by weakness of extensor carpi ulnaris muscle.

- **Posterior interosseous nerve** or deep ulnar nerve is a pure motor branch of radial nerve in the forearm. It supplies the extensor muscles of forearm including the extensor carpi ulnaris.
- **Ulnar nerve** palsy result in loss of fine intrinsic motions of hand. It result in an abduction deformity of the little finger from paralysis of the interossei, interosseous muscle wasting, and partial claw hand from interphalangeal flexion deformities of the ring and little fingers.
- **Radial nerve injury** result in wrist drop. Axillary or proximal injury result in triceps weakness in addition to wrist drop. Injury in the axilla causes damage to triceps brachii, anconeus, brachioradialis and extensor carpi radialis longus.

Ref: Neurology in Clinical Practice: The neurological disorders, Volume 2 edited by Walter George Bradley page 2315. LeBlond R.F., DeGowin R.L., Brown D.D. (2009). Chapter 14. The Neurologic Examination. In R.F. LeBlond, R.L. DeGowin, D.D. Brown (Eds), *DeGowin's Diagnostic Examination*, 9e.

1520. Most common nerve injured in fracture of medial epicondyle of humerus

is:

March 2007

a) Radial nerve

b) Ulnar nerve

c) Median nerve

d) Musculocutaneous nerve

Correct Answer - B

Ans. B: Ulnar Nerve

Certain lesions are commonly associated with fractures to specific areas of the humerus.

At the upper end, the surgical neck of the humerus and anatomical neck of humerus can both be involved, though fractures of the surgical neck are more common. The axillary nerve can be damaged in fractures of this type.

Mid-shaft fractures may damage the radial nerve, which traverses the lateral aspect of the humerus closely associated with the radial groove.

The median nerve is vulnerable to damage in the supracondylar area.

The ulnar nerve is vulnerable to damage near the medial epicondyle, around which it curves to enter the forearm.

1521. Saturday night palsy is which type of nerve injury?

- a) Neuropraxia
- b) Axonotemesis
- c) Neurotemesis
- d) Complete section

Correct Answer - A

Ans. is 'a' i.e., Neuropraxia

Seddon's classification of nerve injuries

- Seddon identified three types of injuries
- 1. Neuropraxia**
- There is contusion of the peripheral nerve which causes reversible physiological nerve conduction block. The axis cylinder (i.e., axon with its endoneurium) is preserved. Thus, there is physiological conduction block without anatomic disruption. The injury is temporary and recovery is complete. It is seen in crutchpalsy, tourniquet palsy, and Saturday night palsy.
- 2. Axonotemesis**
- There is injury to axon but endoneurium is preserved. Spontaneous recovery is expected in some cases. This is seen in closed fractures and dislocations.
- 3. Neurotemesis**
- There is *complete anatomical section of nerve*. No recovery possible. It is seen in open wound.

1522. Which of the following movements is restricted in Perthe's disease -

a) Adduction & external rotation

b) Abduction & external rotation

c) Adduction & internal rotation

d) Abduction & internal rotation

Correct Answer - D

Ans. is.'d' i.e., Abduction & internal rotation

Clinical features of Perthes disease

- Perthes disease is common in *male of age group 5-10 years*.
- *Pain in the hip, often radiating to knee.*
- *Limp (antalgic limp)*
- *Limitation of movement :- Abduction, internal rotation and extension are limited, therefore there is adduction, external rotation, and flexion deformity.*
- *Shortening of limb.*
- *Positive trendelenburg test.*
- *During the disease process, bone age is 1-3 years lower than the normal. After healing, bone age returns to normal.*

1523. Radiological sign in case of Perthe's disease ?

- a) Epiphyseal calcification
- b) Organized calcification
- c) Lateral subluxation femur head
- d) Restriction of abduction

Correct Answer - B

Ans. is 'b' i.e., Organized calcification

Seronegative spondyloarthropathies

- The seronegative spondyloarthropathies are a group of disorders that share certain clinical features and genetic associations. The word seronegative refers to the absence of rheumatoid factor in this group of disorders. The seronegative spondyloarthropathies include ?
- 1. Ankylosing spondylitis
- 2. Reactive arthritis → Reiter syndrome and enteritis associated arthritis
- 3. Psoriatic arthritis
- 4. Arthritis associated with inflammatory bowel disease, i.e. enteropathic arthritis

Features of seronegative spondyloarthropathies

- Onset usually before 40 years
- Absence of RA factor
- HLA - B27 positive
- Presence of uveitis

1524. Cause of Coxa vera ?

- a) Congenital
- b) Perthe's disease
- c) SCFE
- d) All of the above

Correct Answer - A

Ans. is 'd' i.e., All of the above

Coxa vera

- Coxa vera refers to reduced angle between the neck and shaft of the femur.
- Coxa vera may be congenital or acquired.

1. Congenital (developmental / Infantile) coxa vera

1. This is coxa vara resulting from some unknown growth anomaly at the upper femoral epiphysis.
2. It is noticed as a painless limp in a child who has just started walking.
3. In severe cases, shortening of the leg may be obvious.
4. On examination, abduction and internal rotation of the hip are limited and the leg is short.
5. X - rays will show a reduction in neck - shaft angle.
6. The epiphyseal plate may be too vertical.
7. There may be a separate triangle of bone in the inferior portion of the metaphysis, called Fairbank's triangle.
8. Treatment is by a subtrochanteric corrective osteotomy.

2. Aquired coxa - vera

- Aquired coxa-vera is seen in :-
 1. SCFE (slipped capital femoral epiphysis)
 2. Sequelae of avascular necrosis of femoral epiphysis

- Legg-Calve Perthe's disease
- Femoral neck fracture
- Traumatic hip dislocation
- Post reduction of CDH
- Septic necrosis
- **Associated with pathological bone disorders**
 - 1. Osteogenesis imperfecta
 - 2. Fibrous dysplasia
 - 3. Osteopetrosis

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1525. Von-Rosen's sign is positive in ?

a) Perthe's disease

b) SCFE

c) DDH

d) CTEV

Correct Answer - C

Ans. is 'c' i.e., **DDH**

Radiological features of DDH/CDH

- In Von Rosen's view following parameters should be noted .
 1. Perkin's line : Vertical line drawn at the outer border of acetabulum
 2. Hilgenreiner's line : Horizontal line drawn at the level of tri-radiate cartilage
 3. Shenton's line : Smooth curve formed by inferior border of neck of femur with superior margin of obturator foramen.
 4. Acetabular index : Normally is 30°
 5. CE angle of Wiberg : Normal value is $15-30^\circ$
- *Normally the head lies in the lower and inner quadrant formed by two lines (Perkin's & Hilgenreiner's). In DDH the head lies in outer & upper quadrant*
- *Shenton's line is broken*
- Delayed appearance & retarded development of ossification of head of femur
- Sloping acetabulum
- *Superior & lateral displacement of femoral head*
- **Von-Rosen's line**
 - This is a line, which helps in the diagnosis of DDH in infants *less than 6 months*.
 - For this AP view of pelvis is taken with both lower limb in 45°

- abduction and full internal rotation.
- Upward prolongation of long axis of shaft of the femur points towards the lateral margin of the acetabulum and crosses the pelvis in the region of sacroiliac joint.
 - In CDH, upward prolongation of this line points towards anterior superior iliac spine and crosses the midline in the lower lumbar region ---> *Positive Von-Rosen's sign.*

1526. Splint used in CTEV after correction ?

a) Bohler-Brown splint

b) Thomas splint

c) Dennis Brown splint

d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Dennis Brown splint

Treatment of CTEV at birth

- Ideally treatment should be begun immediately after birth, certainly not more than 1 week later
- The principles of treatment are :-
 1. Correction of deformity by manipulation
 2. Maintenance of this correction by immobilizing the foot in over-corrected position in between the manipulations. Three methods are available for maintenance :-
 1. A plaster of paris cast (most commonly used)
 2. Metal splints (Denis brown splint)
 3. Adhesive strapping
- Among these, retention in a plaster is much to be preferred, because it holds the foot in the over-corrected position more efficiently and for a longer period than do metal splints or strapping.
- The plaster must extend to the upper thigh, with the knee flexed 90°.
- The plaster must be changed every week for the first 6 weeks and then every 2 weeks until the correction is achieved.

1527. Salter's pelvic osteotomy is done for treatment of ?

a) CTEV

b) SCFE

c) DDH

d) None

Correct Answer - C

Ans. is 'c' i.e., DDH

Treatment of CDH/DDH

- The aim of treatment in DDH is to achieve and maintain an early concentric reduction and maintain it until the hip becomes clinically stable and a round acetabulum cover it.
- Treatment plan is according to the age :?
 1. 1- 6 months of age :- Pavilk harness and/or Von-rosen splint are used to maintain the reduction. If dislocation persists, closed reduction or traction followed by casting is done.
 2. 6 - 18 months of age :- Closed reduction or traction followed by casting. If closed reduction fails, open reduction followed by casting is recommended.
 3. 18 months - 3 years :- Open reduction with femoral shortening (if femoral site is involved) or salter asteotomy (if acetabulum is involved).
 4. 3 - 8 years :- Open reduction with femoral shortening with or without acetabular reconstructive osteotomy.
- Acetabular reconstruction procedures are :-
 1. Salter 's osteotomy
 2. Chiari's pelvic displacement osteotomy
 3. Pemberton's pericapsular osteotomy

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1528. Rocker bottom foot is due to ?

a) Overtreatment of CTEV

b) Malunited fracture calcaneum

c) Horizontal talus

d) Neural tube defect

Correct Answer - A

Ans. is 'a' i.e., Overtreatment of CTEV

Rocker bottom foot

- Rocker bottom foot is a foot with a convex plantar surface with an apex of convexity at the talar head (normal plantar surface is concave). Causes of Rocker Bottom foot are :-
 1. Congenital vertical talus
 2. Overcorrection of CTEV
 3. Improper correction of CTEV, i.e. forceful correction of equines by dorsiflexion before correction of adduction, varus and inversion.
 4. Edward's syndrome, Escobar syndrome, Apert's syndrome.
- Congenital vertical talus may be associated with arthrogryposis, Prune belly syndrome, neurofibromatosis, and spinal muscular dystrophy

1529. Deformity in transient synovitis of Hip ?

- a) Abduction
- b) Flexion
- c) External rotation
- d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Transient synovitis of Hip

- Transient synovitis of hip is also known as observation hip, toxic synovitis or irritable hip. Its a self-limiting, inflammatory condition of the synovium, that lasts only a short time (therefore known as transient) It is the most common cause of hip pain and limp in children under 10 yrs of age. Cause is not known but association has been seen with a recent history of an upper respiratory tract infection.
- Presentation is with hip pain or limp. The limb is in attitude of slight flexion, abduction and external rotation. The child may have low grade fever. The ESR, C-Reactive protein & WBCs count are normal (This differentiates Transient synovitis from Septic arthritis a serious condition, in which patient has high grade fever and elevated ESR, C-Reactive protein and WBC count). Radiograph or ultrasound may show widening of the joint space However, most of the time x-ray is normal.
- Usually the treatment of a clinically suspected case of transient synovitis of hip is Bed rest, NSAIDS and observation.
- USG guided aspiration is indicated for :-
 - .. Temperature > 99.5° F
 - ?. ESR > 20 (Raised ESR)

3. Severe hip pain with ROM

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1530. Common fractures in children are all except ?

a) Lateral condyle humerus

b) Supracondylar humerus

c) Fracture of hand

d) Radius-ulna fracture

Correct Answer - C

Ans. is 'c' i.e., Fracture of hand

Common fractures in children

1. Forearm bones fractures
2. Supracondylar fracture of the humerus
3. Fracture of lateral condyle of humerus
4. Epiphyseal injuries
5. Spiral fracture of tibial shaft

1531. Thurston Holland sign is seen in ?

a) Type I

b) Type II

c) Type III

d) Type IV

Correct Answer - B

Ans. is 'b' i.e., Type II

Epiphyseal (Physeal) Injuries

- The junction between the metaphysis and epiphysis, i.e. physal plate/growth plate, is the weakest point of a long bone *in children* and is, therefore, most vulnerable to shearing forces.
- Salter and Harris have classified epiphyseal injuries into five types ?

Type I : Complete separation of epiphysis from the metaphysis without fracture. Common in rickets, scurvy and osteomyelitis.

Type II: The fracture involves the physis and a triangle of metaphyseal bone (Thurston Holland sign). This is the commonest type of epiphyseal injury accounting for 73 percent of cases over 10 years of age.

Type III: The fracture is intra- articular and extends along the physis and then along the growth plate. This injury is relatively uncommon.

Type IV: The fracture is intra- articular and extends through the epiphysis, physis and metaphysis. Perfect reduction is necessary and open reduction is more often necessary to prevent growth arrest.

Type V : Crushing of epiphysis. Growth arrest usually follows.

Type VI (Rang's type) : There is a peripheral physis (perichondrial ring) injury.

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1532. Picture frame vertebra is seen in ?

- a) Paget's disease
- b) Osteopetrosis
- c) Osteoporosis
- d) Ankylosing spondylitis

Correct Answer - A

Ans. is 'a' i.e., Paget's disease

Radiological features of Paget's disease

- Radiographic features depend on the stage of the disorder : ?
A. In the early osteolytic phase
- Active bone resorption is evident as a radiolucent wedged area in long bones termed as 'candle flame' or 'blade of grass'.
- In the flat bones such as the calvarium or the iliac bone, purely osteolytic lesion is noted, known as osteoporosis circumscripta.
- B. Later phases of new bone formation**
- Bone remodelling appears radiographically as thickening of the cortex, coarse trabeculation and enlargement or expansion of an entire bone or area of a long bone.
- Vertebral cortical thickening of the superior and inferior end plates creates a 'picture frame vertebra'.
- Diffuse radiodense enlargement of a vertebra is referred to as 'ivory vertebra'.
- Skull x-ray shows focal patchy densities-cotton ball appearance, which is quite characteristic of Paget disease.
- Pelvic radiograph demonstrate disruption of fusion of the sacro-iliac joints and softening with protrusio acetabuli.
- Long bones reveal bowing deformities and typical pagetic changes of cortical thickening and expansion and areas of lucency and

sclerosis.

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1533. All are features of Paget's disease except ?

- a) Defect in osteoclasts
- b) Common in female
- c) Can cause deafness
- d) Can cause osteosarcoma

Correct Answer - B

Ans. is 'b' i.e., Common in female

Paget disease

- Paget's disease is characterized by increased bone turnover and enlargement and thickening of the bone, but the internal architecture is abnormal and the bone is usually brittle. Primary defect is in osteoclasts with increased osteoclastic activity. This results secondarily increase in osteoblastic activity (normal osteoclasts and osteoblasts act in a co-ordinated manner). So, characteristic cellular change is a marked increase in osteoclastic and osteoblastic activity. Bone turnover is accelerated, plasma alkaline phosphatase is raised (a sign of osteoblastic activity) and there is increased excretion of hydroxyproline in urine (due to osteoclastic activity).

Clinical features of Paget's disease

- Paget's disease is slightly more common in males and is seen after 40 years of age.
- The pelvis and tibia being the commonest sites, and femur, skull, spine (vertebrae) and clavicle the next commonest.
- Most of the patient with Paget's disease are asymptomatic, the disorder being diagnosed when an x-ray is taken
- for some unrelated condition or after the incidental discovery of raised serum alkaline phosphatase.

- When patients does present, they present because any of the three :
-

- .. Pain : - Dull constant ache
- 2. Deformities : - Bowing of long bones, platybasia.
- 3. Complications of the disease

Complications of Paget's disease

- Following complications can occur in Paget's disease : -
- .. Fracture : Are common in weight bearing bones
- 2. Cranial nerve compression : - May cause impaired vision, facial palsy, trigeminal neuralgia or deafness.
- 3. Otosclerosis : - Another cause of deafness in Paget's disease.
- 4. Spinal canal stenosis and nerve root compression
- 5. High output cardiac failure
- 6. Osteoarthritis : of Hip and knee
- 7. Rarely osteosarcoma

1534. All are true about chronic osteomyelitis except ?

- a) Reactive new bone formation
- b) Cloaca is an opening in involucrum
- c) Involucrum is dead bone
- d) Sequestrum is hard and porous

Correct Answer - C

Ans. is 'c' i.e., Involucrum is dead bone

Pathology in chronic osteomyelitis

- Chronic osteomyelitis occurs most commonly in long bones. Bone is destroyed or devitalized in the affected part. Cavities containing pus and pieces of dead bone (sequestra) are surrounded by vascular tissue, and beyond that by areas of sclerosis due to reaction new bone formation, which may take the form of a distinct bony sheath (involucrum) Often sinus track leads to the skin surface; the sinus tends to heal and present down recurrently, but if a sequestrum is present it never heals permanently. This is because sequestra act as substrate for bacterial adhesion in much the same way as foreign implants, ensuring the persistence of infection until they are removed or discharged through perforations in the involucrum and sinuses that drain to the skin.

Sequestrum

- Sequestrum is a piece of dead bone, surrounded by infected granulation tissue trying to eat the sequestrum away.
- The sequestrum is hard, rough, porous, light in weight and lighter in colour than normal. Normal pattern of bone is lost. (Note : Sequestrum in syphilis and TB is heavier than normal bone because sclerosis usually precedes the death of the bone).

- On x-ray, sequestra show up as unnatural dense fragments, in contrast to the surrounding osteopenic bone.
Involucrum
- Involucrum is reactive new bone overlying a sequestrum.
- There may be some holes in the involucrum for pus to drain out. These holes are called cloaca.

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1535. Brodie's abscess is ?

- a) Acute osteomyelitis
- b) Subacute osteomyelitis
- c) Chronic osteomyelitis
- d) Septic arthritis

Correct Answer - C

- Brodie's abscess is a sub-acute form of osteomyelitis, presenting as a collection of pus in bone, often with an insidious onset.
- Classically, this may present after progression to a draining abscess extending from the tibia out through the skin.
- Occasionally acute osteomyelitis may be contained to a localized area and walled off by fibrous and granulation tissue. This is termed **Brodie's abscess**.
- Most frequent causative organism is *Staphylococcus aureus*.
- Usually occurs at the metaphysis of long bones. Distal tibia, proximal tibia, distal femur, proximal or distal fibula, and distal radius.
- Brodie's abscess is best visualized using computed tomography (CT) scan.
- Associated atrophy of soft tissue near the site of infection and shortening of the affected bone. Osteoblastoma may be a classic sign for Brodie's abscess.
- In the majority of cases, surgery has to be performed.
- If the cavity is small then surgical evacuation and curettage are performed under antibiotic cover.
- If the cavity is large then the abscess space may need packing with cancellous bone chips after evacuation.

1536. Poor prognostic indicator of Pott's paraplegia

a) Early onset

b) Active disease

c) Healed disease

d) Wet lesion

Correct Answer - C

Ans. is 'c' i.e., Healed disease

Prognosis of Pott's paraplegia

	Poor	Good	
• Degree	Complete paraplegia (grade IV)	Partial (only sensory or motor)	
• Duration	Longer (> 12 months)	Shorter	
• Type	Late (chronic) onset	Early (acute) onset	
• Speed of onset	Rapid (sudden)	Slow (insidious)	
• Age		Younger	Old
• General condition	Poor	Good	
• Vertebral disease	Healed	Active	
• Kyphotic deformity	> 60°	< 60°	>
• Cord on MRI		Normal	

Myelomalacia or syringomyelia		
• Preoperative lesion	Wet lesion	Dry

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1537. Aspirated synovial fluid in septic arthritis will have?

- a) Clear color
- b) High viscosity
- c) Markedly increased polymorphonuclear leukocytes
- d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Markedly increased polymorphonuclear leukocytes

Appearance- Purulent

Clarity- Opaque

Viscosity- Decreased

Cell count- > 80000 (> 80% PMNs)

Example- Bacterial arthritis

1538. Moth eaten bone is ?

- a) Osteoid osteoma
- b) Multiple myeloma
- c) Eosinophilic granuloma
- d) Chondromyxoid fibroma

Correct Answer - B

Ans. is 'b' i.e., Multiple myeloma

Patterns of bone destruction present in a lytic lesion ?

1. Geographic : Sharp clearly defined margins. Less aggressive, benign. Eg: non ossifying fibroma, chondromyxoid fibroma, eosinophilic granuloma.
2. Moth eaten appearance : Holes in destroyed bone. Rapid growth, malignant Eg: Myeloma, metastasis, lymphoma.
3. Permeative : Ill defined, diffuse, somewhat subtle destructive process of bone. Eg: Lymphoma, leukemia, Ewing's sarcoma, osteomyelitis.

1539. All are true about aneurismal bone cyst except ?

- a) Eccentric
- b) Expansile & lytic
- c) Treated by simple curettage
- d) Metaphysis of long bones

Correct Answer - C

Ans. is 'c' i.e., Treated by simple curettage

Aneurysmal bone cyst

- Aneurysmal bone cyst occur in children and young adults (5-20 years).
- The term aneurysmal is used because it causes expansion of overlying cortex like vascular expansion of an aneurysm.
- The metaphysis of long bones is involved most commonly. Most common in femur and tibia; however any long bone can be involved.
- Other common sites are posterior elements of vertebrae and pelvis.

athology

- Cystic spaces of variable sizes & number which are filled with blood but not lined with vascular endothelium. The wall of vascular space is lined with fibroblast cells with collagen, giant cells, hemosiderin & osteoid (secondary to microfractures).

Clinical features

- With expanding lesions, pain may be a presenting feature.
- Large cyst can also cause swelling
- Pathological fracture may occur (but less frequent than simple bone cyst).

Radiological features of aneurysmal bone cyst

- Eccentric, expansile osteolytic lesion

- The characteristic feature is 'blown-out' distension of one surface of the bone.
- Overlying cortex may be intact or disrupted.
- Extensive sclerosis at the interface between normal and expanded cortex (buttering) may be present.
- Delicate thin trabeculae is characteristic and an expansile ballooning lesion may produce a 'soap-bubble appearance'.
- Lesion occurs at metaphysis of long bones. Other common locations include the posterior elements of the spine (pedicle, lamina, transverse process, spinous process) and pelvis.

Treatment

- Surgery is the treatment of choice. Curettage and bone grafting is the procedure commonly followed.

1540. Commonest malignant tumor of skeletal system ?

a) Multiple myeloma

b) Metastasis

c) Osteosarcoma

d) Chondrosarcoma

Correct Answer - B

Ans. is 'b' i.e., Metastasis

- Commonest bone malignancies → Secondaries
- Commonest primary malignant tumor myeloma → A- Multiple
- Commonest primary malignant tumor Osteosarcoma of long bones →
- **Commonest benign tumor of bone Osteochondroma** - →
(Osteochondroma is not true neoplasm since its growth stops with cessation of growth at the epiphyseal plate)
- Commonest true benign tumor of bone Osteoid osteoma →
- Commonest benign tumor of hand Enchondroma →

1541. All are common sites of primary for bone metastasis except

a) Breast

b) Breast

c) Brain

d) Brain

Correct Answer - C

Ans. is 'c' i.e., Brain

- Metastatic bone disease is the commonest malignancy of bones and is much more common than primary bone tumors.
- The commonest sites for bone metastases are vertebrae (most common), pelvis, the proximal half of the femur and the humerus.
- Extremities distal to elbow and knee are least commonly involved sites.
- Spread is usually via the blood stream; occasionally, visceral tumors spread directly into adjacent bones e.g., the pelvis and ribs.
- Certain tumors are known to be common sources of bone metastasis.
- The following primary tumors are the most common to metastasize in the bone; breast, prostate, lung, thyroid, kidney, and gastrointestinal tract.
- The commonest source of metastatic bone disease is carcinoma of the breast
- In males most common source is prostate carcinoma.
- Bladder and uterine carcinomas are less common sources.
- In children, skeletal metastases originate from neuroblastoma, Ewing's sarcoma, and osteosarcoma.

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1542. Which of the following is least likely associated with vascular injury ?

- a) Fracture supracondylar femur
- b) Fracture supracondylar humerus
- c) Fracture shaft of femur
- d) Fracture shaft humerus

Correct Answer - D

Ans. is 'd' i.e., Fracture shaft humerus

- **Vascular injury may be seen in -**
 - 1. Fracture supracondylar humerus ---> Brachial artery
 - 2. Fracture shaft femur (especially distal 3rd)--->Popliteal artery
 - 3. Fracture supracondylar femur --> Popliteal artery

1543. Exsanguinating blood loss in?

a) Closed humerus fracture

b) Closed tibia fracture

c) Open femur fracture

d) Open humerus fracture

Correct Answer - C

Ans. is 'c' i.e., Open femur fracture

- Exsanguination is the process of blood loss, to a degree sufficient to cause death.
- Shaft femur fracture out of the above is associated with maximum blood loss and more blood loss is expected in cases of open fracture. Thus, the most probable answer is open fracture shaft femur.
- Two important fractures which can cause significant blood loss are -
 - ... Fracture pelvis
 - ... Fracture shaft femur

1544. Dripping Candle Wax lesion on spine ?

- a) Metastasis
- b) TB spine
- c) Osteopetrosis
- d) Melorheostosis

Correct Answer - D

Ans. is 'd' i.e., Melorheostosis

Melorheostosis

- Melorheostosis is a medical developmental disorder and mesenchymal dysplasia in which the bony cortex widens and becomes hyperdense in a sclerotomal distribution.
- Caused by a mutation of the LEMD3 gene.
- Can be detected by radiograph due to thickening of bony cortex resembling "dripping candle wax".
- Disorder tends to be unilateral and monoostotic, with only one limb typically involved. Cases with involvement of multiple limbs, ribs, and bones in the spine have also been reported.
- There are no reported cases of involvement of skull or facial bones.
- Melorheostosis can be associated with pain, physical deformity, skin and circulation problems, contractures, and functional limitation. It is also associated with a benign inner ear dysplasia known as osteosclerosis.

1545. Bunion is commonly seen at ?

a) Great toe MTP joint

b) Medial malleolus

c) Lateral Malleolus

d) Shin of tibia

Correct Answer - A

Ans. is 'a' i.e., Great toe MTP joint

Bunion

- A hallux abducto valgus deformity, commonly called a bunion, is a deformity characterized by lateral deviation of the great toe, often erroneously described as an enlargement of bone or tissue around the joint at the head of the big toe.
- The bump itself is partly due to the swollen bursal sac or an osseous (bony) anomaly on the metatarsophalangeal joint. The larger part of the bump is a normal part of the head of the first metatarsal bone that has tilted sideways to stick out at its top.

1546. Ischial bursitis is also known as ?

a) Clergyman's knee

b) Housemaid's knee

c) Weaver's bottom

d) Students elbow

Correct Answer - A

Ans. is 'c' i.e., Weaver's bottom

Prepatellar bursitis	Housemaid's knee

Infrapatellar bursitis	Clergyman's knee

Olecranon bursitis	Student's elbow

Ischia] bursitis	Weaver's bottom

On lateral malleolus	Tailor's ankle

On great toe	Bunion

1547. Most common site of myositis ossificans ?

a) Knee

b) Elbow

c) Shoulder

d) Wrist

Correct Answer - B

Ans. is '**b**' i.e., Elbow

- Myositis ossificans is the extraskeletal heterotopic ossification that occurs in muscles and other soft tissues.
- Trauma is the most important cause of myositis ossificans.
- Usually there is history of severe single injury.
- It is more common in children.
- Most commonly involved joint is elbow followed by hip.
- There is history of trauma around the elbow, i.e. fracture supracondylar humerus, dislocation of elbow or surgery with extensive periosteal stripping.
- Massage to the elbow and vigorous passive stretching to restore movements are aggravating factor.
- It occurs in muscles which are vulnerable to tear under heavy loads, such as quadriceps, adductors, brachialis, biceps, and deltoid.
- X-ray finding is characteristic and shows distinct peripheral margin of mature ossification and a radiolucent center of immature osteoid & primitive mesenchymal tissue

1548. Turn-buckle cast is used for ?

a) Fracture shaft humerus

b) Fracture shaft femur

c) Scoliosis

d) Cervical spine injury

Correct Answer - C

Ans. is 'c' i.e., Scoliosis.

Name of the case

Minerva cast

Risser's cast

Turn-buckle cast

Shoulder spica

U-slab

Hanging cast

Colle's cast

Hip spica

Cylinder cast

PTB cast

Use

Cervical spine disease

Scoliosis

Scoliosis

Shoulder immobilisation

Fracture of the humerus

Fracture of the humerus

Colles' fracture

Fracture of the femur

Fracture of the patella

Fracture of the tibia

1549. Which of the following is an orthopedic emergency?

- a) Intraarticular fracture
- b) Septic arthritis
- c) Fracture lateral condyle humerus
- d) Fracture neck femur

Correct Answer - B

Ans. is 'b' i.e., Septic arthritis

Timing of surgery

- Fracture surgery can be divided into emergency, urgency or elective.

Emergency

- Emergency surgery is immediate for life and limb threatening problems. Examples are : -
 1. Fracture or dislocation with vascular injury.
 2. Fractures with compartment syndrome
 3. Irreducible dislocation or fracture dislocation of major joint.
 4. Compound (open) fractures
 5. Septic arthritis
 6. Spinal injuries with deteriorating neurological deficit.

Urgency

- Urgent surgery is the surgery, which should be done early (within 12-36 hours), but after arranging proper surgical facilities, Important examples are : -
 1. Intra-articular fractures
 2. Fracture neck femur
 3. Fracture lateral condyle humerus in children.
 4. Displaced supracondylar fracture humerus in children.

Elective

- Elective surgery is planned properly and can be done even after some delay (3-4 days to 3-4 weeks).
- Most of the surgeries in orthopaedics are elective. Example are : -
 1. Closed fracture long bone
 2. IT fracture
 3. Most of the orthoscopic procedures
 4. Arthroplasty

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1550. Maximum weight that can be given with skeletal traction is:
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a) 5 kg

b) 10 kg

c) 15 kg

d) 20 kg

Correct Answer - D

Ans. D: 20 kg

Traction is usually applied to the spine, pelvis, neck, arms, or legs. The force is generated by weight or force against the weight of the body.

The two main types of traction are skin traction and skeletal traction. Of these two types, many specialized forms have been developed to treat conditions in specific parts of the body.

With skin traction, weights are attached to the skin, which applies the pulling force to the bone. It is used when light (3 to 4 kg) or short-term traction is needed.

With skeletal traction, pins are attached to the bone so that the pulling force is applied directly to the bone. Skeletal traction is used when skin traction is not possible and when greater weight (upto 20 kg) is needed.

1551. Which arthritis causes no periosteal reaction

- a) Psoriatic arthritis
- b) Reactive arthritis
- c) Neuropathic arthritis
- d) Rheumatoid arthritis

Correct Answer - D

Answer- D. Rheumatoid arthritis

Arthritis with Periosteal Reaction are Psoriatic arthritis, Reactive Arthritis And Neuropathic Arthropathy.

1552. Pencil in cup deformity is seen in ?

- a) Rheumatoid arthritis
- b) Ankylosing spondylitis
- c) AVN
- d) Psoriatic arthritis

Correct Answer - D

Ans. is `D i.e., Psoriatic arthritis

Gull's wing appearance- Psoriatic arthritis

Opera glass deformity- Psoriatic arthritis

Cup and pencil deformity- Psoriatic arthritis

1553. Windswept deformity in foot is seen in ?

a) Rickets

b) RA

c) Hyperparathyroidism

d) Scurvy

Correct Answer - B

Ans. is 'b' i.e., RA

Windswept deformity

1. Knee : - A valgus deformity of one knee in association of varus deformity of other knee is known as windswept deformity. It is seen in : Rickets, Physeal oseocondromatosis, Hereditary dysplasia (epiphyseal dysplasia) of bone and Rheumatoid arthritis.
2. Foot : - Deviation of all - toes in one direction (usually laterally) is known as windswept deformity. It is seen in Rheumatoid arthritis.
3. Hand : - Deviation of all fingers (usually medially) is known as windswept deformity. It is seen in Rheumatoid arthritis, SLE, and Jacoud's arthropathy.

1554. Most common site of osteochondritis dessicans ?

- a) Lateral part of the medial femoral condyle
- b) Medial part of the medial femoral condyle
- c) Lateral part of the lateral femoral condyle
- d) Medial part of the lateral femoral condyle

Correct Answer - A

Ans. is 'a' i.e., Lateral part of the medial femoral condyle

• Joint	Site of osteochondritis dessicans
• Knee	Lateral surface of the medial femoral condyle
• Elbow	Capitulum of humerus
• Hip	Femoral head
• Ankle	Talus

1555. Which can cause loose body in the joint

-

a) RA

b) Ankylosing spondylitis

c) OA

d) SLE

Correct Answer - C

Ans. is 'c' i.e., OA

- **Causes of loose bodies include :-**

1. Osteoarthritis
 2. Osteochondritis dessicans
 3. Osteochondral fracture (injury)
 4. Synovial chondromatosis
 5. Charcot's disease
- Among these, osteochondral fracture causes single loose bodies, while all other can cause multiple loose bodies, maximum by synovial chondromatosis (up to hundrades).

1556. Most common cause of neuropathic joint ?

- a) Leprosy
- b)) Tabes dorsalis
- c) Diabetes
- d) Nerve injury

Correct Answer - C

Ans. is `c' i.e., Diabetes

Neuropathic joint (Charcot's joint)

- *o It is a progressive destructive arthritis associated with loss of pain sensationx, proprioception or both, in addition normal muscular reflexes that modulate joint movements are decreased.*
- *Without these protective mechanisms, joints are subjected to repeated trauma, resulting in progressive cartilage and bone damage.*
- *o It is most commonly caused by diabetes mellitus.*
- Causes of Neuropathic joint disease (Charcoat's joint)

Causes of Neuropathic joint disease (Charcoat's joint)

Diabetes mellitus (most common)	Amyloidosis
Tabes Dorsalis	Leprosy
	Congenital
Meningomyelocele	indifference to pain
Syringomyelia	Peroneal muscular atrophy

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1557. Insal-Salvati index is used for ?

a) Olecranon

b) Patella

c) Talus

d) Scaphoid

Correct Answer - B

Ans. is 'b' i.e., Patella

- Two radiological indices are commonly used for determining the position of patella -
- **Insall-Salvati index**
 - 1. It is the ratio of patellar tendon length to patella length.
 - 2. Normally it is 1.0.
 - 3. An index of 1.2 or more is seen in patella alta (high riding patella).
 - 4. An index of 0.8 or less is seen in patella baja (low lying patella).
- **Blackburne-Peel index**
 - 1. It is the ratio of (i) the distance of tibial plateau to inferior articular surface of patella (numerator), to (ii) length of articular surface of patella (denominator).
 - 2. Normally it is 0.8.
 - 3. An index of 1 or more is seen in patella alta.

1558. Anterolateral arthroscopy of knee is for ?

- a) To see patella femoral articulation
- b) To see the posterior cruciate ligament
- c) To see the anterior portion of lateral meniscus
- d) To see the periphery of the posterior horn of medial

Correct Answer - A

Ans. is 'a' i.e., To see patella femoral articulation

Standard Portals In Knee Arthroscopy :

- **Anterolateral portal ?**
 - 1. Almost all the structures within the knee joint can be seen except the posterior cruciate ligament, the anterior portion of the lateral meniscus and the periphery of the posterior horn of the medial meniscus in tight knees.
 - 2. Located 1 cm above the lateral joint line and 1 cm lateral to the margin of the patellar tendon.
- **Anteromedial portal ?**
 - 1. Used for additional viewing of lateral compartment and insertion of probe for palpation of medial and lateral compartment structures.
 - 2. Placed 1 cm above the medial joint line, 1 cm inferior to the tip of patella, and 1 cm medial to the edge of the patellar tendon.
- **Posteromedial portal ?**
 - 1. Located on the soft triangular soft spot formed by the posteromedial edge of the femoral condyle and the posteromedial edge of tibia.
 - 2. Used for viewing the posteromedial structures and for repair or removal of the displaced posterior horn of meniscal tears and for posteromedial loose body removal.
- **Superolateral portal -**

- .. Used for diagnostically viewing the dynamics of patello - femoral joint, excision of medial plicae.
- 2. Located just lateral to the quadriceps tendon and about 2.5 cm superior to the superolateral corner of patella.

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1559. Halopelvic traction is used for correcting which deformity

a) Spine

b) Pectus Carinatum

c) Spondyloptosis

d) Coxa Vara

Correct Answer - A

Ans. is 'a' i.e., Spine

- Head-pelvic skeletal traction was first attempted in 1958. With the description of the "halo" skull traction apparatus by Perry and Nickel (1959), a method was provided for immobilising the unstable cervical spine. From this developed "halo-femoral" traction, now used by some surgeons for the correction of spinal deformities before and after operation.

1560. Short 4th metacarpal is a feature of

- a) Hyperparathyroidism
- b) Hyperparathyroidism
- c) Pseudohypoparathyroidism
- d) Scleroderma

Correct Answer - C

Ans. is 'c' i.e., Pseudohypoparathyroidism

Short 4th metacarpal/metatarsal (metacarpal sign)

- Post - traumatic
- Post infection (from sickle cell anemia)
- Turner's syndrome
- Pseudohypoparathyroidism
- Pseudopseudohypoparathyroidism
- Hereditary multiple exostosis
- Chondroectodermal dysplasia (Ellis-vanCreveld syndrome)

1561. Frozen pelvis is seen in ?

a) Osteoarthritis

b) Potts disease

c) Actinomycosis

d) Reiters disease

Correct Answer - B

Ans. is 'b' i.e., Potts disease

- A term for significant involvement of the pelvic floor by malignancy, usually carcinoma, or tuberculosis; in which there is massive extension of pathology to the urinary bladder, female genital tract, and sigmoid colon. Adequate resection of a frozen pelvis is virtually impossible; chemotherapy and radiation therapy are palliative at best.

1562. All are true about constriction ring except ?

- a) Also called schroeder's ring
- b) Can be caused by injudicious oxytocin use
- c) Ring can be palpated per abdomen
- d) Inhalation of amyl nitrate relaxes the ring

Correct Answer - C

Ans, C. Ring can be palpated per abdomen

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1563. 21yr college girl with mild endometriosis treatment-

a) Cyclical OC pill

b) Continuous Oc pill

c) Progesterone only pill

d) Danazole

Correct Answer - A

Ans, A. Cyclical OC pill

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1564. Not seen in endometriosis ?

a) Vaginal discharge

b) Dyspareunia

c) Infertility

d) Chronic pelvic pain

Correct Answer - A

Ans. A. Vaginal discharge

Clinical features of Endometriosis

- Pain
- Infertility
- Dysmenorrhea
- Dyspareunia(deep)

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1565. USG of 28 weeks gestation showing oligohydramnios is likely to be due to ?

a) Gastrointestinal obstruction

b) Renal pathway obstruction

c) Anencephaly

d) Neuromuscular disorder

Correct Answer - B

Ans, B. Renal pathway obstruction

Urinarytract obstruction is an important cause of oligohydramnios.

1566. Anovulatory DUB is due to ?

- a) Absence of progesterone
- b) Excess of estrogen
- c) Hypothalamic pituitary defect
- d) High progesterone

Correct Answer - A

Ans. A. Absence of progesterone

No progesterone is produced when ovulation does not occur, and thus proliferative endometrium persists.

At the tissue level, persistent proliferative endometrium is often associated with stromal breakdown, decreased spiral arteriole density, and increased dilated and unstable venous capillaries.

At the cellular level, the availability of arachidonic acid is reduced, and prostaglandin production is impaired.

For these reasons, bleeding associated with anovulation is thought to result from changes in endometrial vascular structure and in prostaglandin concentration, and from an increased endometrial responsiveness to vasodilating prostaglandins.

1567. In carcinoma cervix surgery to retain conception is done in which stage ?

a) 1B1

b) 1B2

c) 2A

d) 2B

Correct Answer - A

Ans. A. 1B1

Concepts is retained upto term only in stage I A1.

In other stages, hysterectomy is done with fetus left in situ (if it is not viable); or delivery of fetus by classic cesarean hysterectomy followed by radiation (if fetus is viable).

1568. Bishop scoring is done for ?

a) Exchange transfusion in newborn

b) Induction of labour

c) Ventilation of Newborn

d) Gestation of Newborn

Correct Answer - B

Ans. B. Induction of labour

Bishop score, also Bishop's score, also known as cervix score is a pre-labor scoring system to assist in predicting whether induction of labor will be required.

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1569. Teratozoospermia refers to?

- a) Absence of semen
- b) Absence of sperm
- c) All dead sperms in ejaculate
- d) Morphologically defective sperms

Correct Answer - D

Ans. D. Morphologically defective sperms

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1570. Ovarian reserve is best indicated by

a) LH

b) FSH

c) LH/ FSH ratio

d) Estrogen

Correct Answer - B

B i.e. FSH

Ovarian reserve can be best assessed by measuring *FSH levels on 3rd day of menstrual cycle*, clomiphene citrate challenge / provocative test (measures FSH levels on cycle day 10 after antiestrogen clomiphene citrate 100 mg administration from day 5 to 9). Serum inhibin B level and ultrasonic scanning to count the number of antral follicles in ovary are other methods.

Ovarian Reserve

- It refers to the *size of resting / nongrowing / primordial follicle population*, which reflects the *quantity (no) of growing follicles and quality of oocytes within it*. So ovarian reserve determines the *functional reproductive potential of ovary*.
- Under the influence of FSH and LH, there is rapid growth of several follicles in ovary, during first few days of each menstrual cycle. But after a week only 1 follicle begins to outgrow all the others /which involute by a process called atresia and thus preventing more than one child from developing with each pregnancy).
- Ovarian reserve (& capacity of ovary to produce eggs) decline with *advancing age*. Best predictor of ovarian reserve is age. Tests that can determine ovarian reserve include

1571. Bispinous diameter in anatomic outlet ?

a) 10.5 cm

b) 11 cm

c) 11.5 cm

d) 12 cm

Correct Answer - B

Ans. B. 11 cm

Anatomical outlet

Antero-posterior (13 cm)

- Distance between lower border of symphysis pubis to the tip of coccyx.

Transverse diameter (bispinous- 11 cm)

- Distance between the inner borders of ischialtuberosities

Posterior sagittal diameter (8.5 cm)

- Distance between sacrococcygeal joint and anterior margin of anus.

1572. Most suitable type of pelvis in female ?

a) Gynaecoid

b) Android

c) Anthropoid

d) Platypelloid

Correct Answer - A

Ans. A. Gynaecoid

Gynaecoid pelvis round in shape & is most spacious.

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1573. Which pelvis is associated with DTA ?

a) Android

b) Antrhropoid

c) Platypelloid

d) Gynaecoid

Correct Answer - A

Ans. A. Android

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1574. In obstructive labor most important parameter is?

a) Diameter of pelvic inlet

b) Diameter of pelvic outlet

c) Biparietal diameter

d) Bitemporal diameter

Correct Answer - B

Ans. B. Diameter of pelvic outlet

The narrowest diameter for the fetus to pass through is pelvic outlet.

1575. Maximum diameter that passed through maternal pelvis ?

a) Suboccipital bregmatic

b) Biparietal

c) Suboccipital frontal

d) Occipito frontal

Correct Answer - B

Ans, B. Biparietal

Occipitofrontal is large diameter and deflexed head may complicate as deep transverse arrest and obstructed labour.

In case of spacious gynaecoid and anthropoid pelvis it ends up in face to pubis delivery.

Mento-vertical is the largest diameter but it cannot pass through the maternal pelvis.

1576. Semen examination can be done ?

- a) Immediately in semi solid form
- b) After liquefaction
- c) Within 15-30 minutes of liquefaction
- d) 1 1/2 - 2 hr irrespective of liquefaction

Correct Answer - D

Ans. D. 1 1/2 - 2 hr irrespective of liquefaction

Semen analysis

- Best specimen obtained by masturbation
- 3-5 days of abstinence is best, not more than that
- Specimen should be examined within 1 1/2 - 2hr
- Liquefaction usually completes within 15-20 min and if delayed it indicates prostatic dysfunction. Thus during semen analysis timing of liquefaction is important but timing of analysis is not set according to liquefaction.

1577. Lithotomy position increases vaginal opening by how many cm -

a) 1cm

b) 2cm

c) 3cm

d) 4cm

Correct Answer - B

Ans. B. 2cm

In dorsal lithotomy position, the antero-posterior diameter of the outlet may be increased to 1.5-2 cm.

Furthermore, the coccyx is pushed back while the head descends down to the perineum.

1578. Endometrial biopsy is usually done at ?

a) Just before menstruation

b) 10-12 days after menstruation

c) Just after menstruation

d) At the time of ovulation

Correct Answer - A

Ans. A. Just before menstruation

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1579. Oligomenorrhoea means ?

- a) Cycle < 20 days
- b) Cycle more than 45 days
- c) Cycle more than 28 days
- d) Cycle more than 35 days

Correct Answer - D

Ans. D. Cycle more than 35 days

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1580. Magnification obtained by colposcopy is ?

a) 1-2 times

b) 5-6 times

c) 15-25 times

d) 10-20 times

Correct Answer - D

Ans. D. 10-20 times

Colposcope provides a magnification of 10-20 times.

Colpomicroscope provides a magnification 100-300 times.

1581. On which day LH & FSH should be measured ?

a) 1-3rd day

b) 7th day

c) 14th day

d) 10th day

Correct Answer - A

Ans. A. 1-3rd day

Level of the hormone FSH, LH and estradiol are measured on day 3 in infertility workup.

An elevated FSH level on day 3 is an indication of poor ovarian reserve.

Hormonal assessment FSH/LH developing follicle produces estrogen which signals the hypothalamus to increase or reduce the amount of FSH produced by the pituitary gland. When good follicles are not developing estrogen levels are lower and more FSH is produced. This leads to higher level of FSH on day 3.

Day 3 FSH fertility test is not the only parameter used to assess ovarian reserve.

1582. Best parameter for estimation of fetal age by ultrasound in 3rd trimester is ?

a) Femur length

b) BPD

c) Abdominal circumference

d) Intraocular distance

Correct Answer - A

Ans. A. Femur length

Best parameters for estimation of fetal age by ultrasound

- 1st trimester – Crown Rump length (CRL)
- 2nd trimester - Corrected biparietal diameter (cBPD) or head circumference (HC)
- 3d trimester - Head circumference and femur length
- Overall - Crown rump length

1583. Commonest variety of compound presentation is ?

a) Head with hand

b) Head with foot

c) Head with both foot

d) Head, hand & foot

Correct Answer - A

Ans. A. Head with hand

When a cephalic presentation is complicated by the presence of a hand or a foot or both alongside the head or presence of one or both hands by the side of the breech it is called compound presentation. Commonest variety of compound presentation - Head with hand
Rarest variety of compound presentation - Head with hand and foot both.

1584. Hegar sign?

- a) Uterine contraction
- b) Quickening
- c) Bluish discoloration of vagina
- d) Softening of isthmus

Correct Answer - D

Ans. D. Softening of isthmus

Hegars sign

- Present in 2/3 of cases.
 - Demonstrated in 6-10 week
- Signs is based on the fact that:**
1. Upper part of the body of the uterus is enlarged by growing fetus.
 2. Lower part of the body is empty and extremely soft (just above the cervix)
 3. Cervix is comparatively firm.
- Because of variation in consistency on bimanual examination (two fingers in anterior fornix and the abdominal fingers behind the uterus) the abdominal and vaginal fingers seem to oppose below the body of the uterus.

1585. Pregnant women going for long journey & prolonged sitting is associated with danger of ?

a) Thromboembolism

b) Seat belt compression

c) Preterm labor

d) Bleeding

Correct Answer - A

Ans. A. Thromboembolism

Prolonged sitting in car or aeroplane is avoided due to venous stasis or thromboembolism.

1586. Head of baby is removed in breech delivery by which maneuver ?

a) Lovsets maneuver

b) Pinards maneuver

c) Prague

d) Burn Marshall method

Correct Answer - D

Ans. D. Burn Marshall method

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1587. Prague maneuver is used for ?

- a) After coming head in breech
- b) Deep transverse assest
- c) Extraction of extended arms
- d) External cephalic version

Correct Answer - A

Ans. A. After coming head in breech

Sometimes the head rotates posteriorly so, that the face is behind the pubis.

Delivery in this position is difficult and 'Prague maneuver' may be tried.

1588.

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Trial of labour in previous caesarian section can be done in ?

- a) Placenta previa type III
- b) Previous two classical caesarian section
- c) Suspected CPD
- d) Previous caesarian section with adequate pelvis

Correct Answer - D

Ans. D. Previous caesarian section with adequate pelvis

Adequate pelvis is an indication of trial of labour.

Other three options are contraindications.

1589. Hematoma during labour is not due to ?

- a) Improper haemostasis
- b) Extension of cervical laceration
- c) Rupture of paravaginal venous plexus
- d) Obliteration of dead space while suturing vaginal wall

Correct Answer - D

Ans. D. Obliteration of dead space while suturing vaginal wall

Failure of obliteration of dead space causes hematoma (not obliteration of dead space).

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1590. Treatment of jaundice in third trimester ?

- a) Termination of pregnancy
- b) Termination at 42 weeks
- c) Termination at 38 weeks
- d) Wait for spontaneous labour

Correct Answer - C

Ans, C. Termination at 38 weeks

In patients of intrahepatic cholestasis of pregnancy there is increased perinatal mortality.

Hence fetal surveillance is done with biweekly NST.

Conventional antepartum testing does not predict fetal mortality as there is sudden death in cholestasis due to acute hypoxia.

Hence delivery is recommended at 37-38 weeks.

In those patients with jaundice with S bilirubin > 1.8 mg%, termination of pregnancy should be done at 36 weeks.

1591. Rate of turnover of amniotic fluid is ?

a) 500 cc/h

b) 1L/hr

c) 1500 cc/h

d) 2L/h

Correct Answer - A

Ans. A. 500 cc/h

Specific gravity of Amniotic fluid: 1.008 to 1.010

Osmolality: 250 mosm/L

Completely replaced in 3 hours.

Rate of amniotic fluid turn over is 500cc/hr.

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1592. Maximum amount of amniotic fluid is seen at how many weeks ?

a) 16

b) 30

c) 12

d) 38-40

Correct Answer - D

Ans. D. 38-40

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1593. Uterus post pregnancy becomes a pelvic organ in?

a) 4 weeks

b) 6 weeks

c) 12 weeks

d) 2 week

Correct Answer - D

Ans, D. 2 week

By the end of 2 weeks - uterus is a pelvic organ.

By the md of 6 week - uterus returns almost to its normal size (pre pregnant size).

1594. Assisted head delivery is done in ?

- a) Brow presentation
- b) Face presentation
- c) Persistent occipito posterior position
- d) Twin presentation 1522. % of

Correct Answer - C

Ans. C. Persistent occipito posterior position

Occipito posterior positions

- "In practice about 5-10% of women admitted in labour with cephalic presentations present with occipito-posterior presentations.
- Given time and patience, many of these will rotate and get corrected to occipito-anterior position and deliver normally.

1595. % of women delivering on their EDD is ?

a) 25%

b) 50%

c) 4%

d) 15%

Correct Answer - C

Ans. C. 4%

Based on the Noegeles fomulalabour starts approximately on: -

- Expected date – 4%

1596. Role of ergometrine to stop post partum hemorrhage is due to ?

a) Increased uterine muscle tone

b) Vasoconstriction

c) Increased platelet aggregation

d) Increased coagulation

Correct Answer - A

Ans. A. Increased uterine muscle tone

Ergometrine acts directly on myometrium and excites uterine contractions, which closes blood vessels in between thus helps in controlling PPH.

Vasoconstrictive action of ergometrine does not control bleeding but may cause rise in B.P. gangrene of toe, Precipitate bronchospasm.

Option (c) & (d), are not the action of ergometrine.

1597. Contenance & incontinence of urine is seen in ?

a) VVF

b) Vesicoperitoneal

c) Ureterovaginal

d) Uretrovaginal

Correct Answer - C

Ans. C. Ureterovaginal

Contenance and incontinence of urine is seen in ureterovaginal fistula.

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1598. Type of suture used in complete perineal tear is -

a) Catgut

b) Silk

c) Vicryl

d) Vicryl and catgut

Correct Answer - D

Ans. D. Vicryl and catgut

Rectum is dissected to clear of scar tissue & freshening of cut edges.

Cut edges of rectum and anus are sutured with vicryl.

Deep muscle of perineal body and levator ani are identified and sutured with No 1-catgut.

Superficial muscle is sutured with vicryl-catgut sutures.

1599. Uterine rupture is most common in -

a) Ant lower segment

b) Classical C.S

c) Placenta previa

d) Normal labour

Correct Answer - B

Ans. B. Classical C.S

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1600. Chances of uterine rupture are least in -

a) LSCS

b) Classic

c) Inverted

d) Low vertical

Correct Answer - A

Ans. A. LSCS

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1601. Age of metropathic hemorrhagica is ?

a) 20-25

b) 50-55

c) 60-65

d) 40-45

Correct Answer - D

Ans, D. 40-45

Metropathia hemorrhagica

- Specialized form of DUB.
- Mostly seen in premenopausal women.
- Maximum age incidence: Between ages 40-45 years.
- Patient complains of prolonged amenorrhea (of 6-8 weeks) followed by excessive painless bleeding (anovular bleeding).

1602. Management of eclampsia in 34 weeks of pregnancy is -

- a) Continue of convulsion and wait for 37 wk to complete
- b) Wait for spontaneous labours
- c) BP continueu
- d) Anti hypertensive, anticonvulsant and termination of pregnancy

Correct Answer - D

Ans. D. Anti hypertensive, anticonvulsant and termination of pregnancy

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1603. Hematuria in previous LSCS patient indicates -

a) Urinary tract infection

b) Placenta previa

c) Rupture uterus

d) None

Correct Answer - C

Ans. C. Rupture uterus

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1604. Battle door insertion of placenta ?

- a) Cord attached to the margin of placenta
- b) Placenta attached to the margin
- c) Cord attached to the membranes
- d) Placenta attached to the centre

Correct Answer - C

Ans. C. Cord attached to the membranes

Change in fetal heart rate (tachycardia/loss of beat to beat variability/decelerations) is earliest sign of impending scar dehiscence, followed by maternal tachycardia.

1605. Metrorrhagia is produced by the following except?

a) Polyp

b) CA endometrium

c) IUD

d) Intramural fibroid

Correct Answer - D

Ans, D. Intramural fibroid

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1606. Bonney's test is used determine ?

a) Uterine prolapsed

b) Stress urinary incontinence

c) Vesicovaginal fistula

d) Uteric fistula

Correct Answer - B

Ans. B. Stress urinary incontinence

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1607. Red degeneration of fibroid is seen in ?

a) Early pregnancy

b) Mid pregnancy

c) Puerperium

d) Nulliparous women

Correct Answer - B

Ans. B. Mid pregnancy

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1608. Radical hysterectomy in stage Ib ca cervix better than radiotherapy all are true except ?

- a) Chance of survival more
- b) Chance of recurrence less
- c) Ovary function can be preserved
- d) Less complicated

Correct Answer - A

Ans, A. Chance of survival more

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1609. Bilateral ovarian carcinoma + capsule + ascitis+ paraaortic LN. Which stage ?

a) 1C

b) 2C

c) 3C

d) 4C

Correct Answer - A

Ans. A. 1C

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1610. Radiation to point A in cervix is ?

a) 8000 rad

b) 6000 rad

c) 10000 rad

d) 4000 rad

Correct Answer - A

Ans. A. 8000 rad

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1611. Most common presentation of cervical cancer is -

a) Deep pelvic pain

b) Rectal pain

c) Bleeding per vaginum

d) Weight loss

Correct Answer - C

Ans, C. Bleeding per vaginum

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1612. Treatment of simple hyperplasia of endometrium is ?

a) Progesterone

b) Estrogen

c) Hysterectomy

d) Cryosurgery

Correct Answer - A

Ans, A. Progesterone

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1613. Most common presenting feature of complete mole is ?

- a) Vomiting
- b) Amenorrhoea
- c) Amenorrhoea
- d) Bleeding per vaginum

Correct Answer - D

Ans, D. Bleeding per vaginum

Clinical features of complete mole

- Vaginal bleeding is the most common symptom causing patient to seek treatment for complete mole pregnancy.
- Abnormal uterine bleeding usually during the first trimester is the most common presenting symptom occurring in more than 90% of patients with molar pregnancies.

1614. Androgenic XX chromosome is ?

- a) Partial mole
- b) Complete mole
- c) Turner's syndrome
- d) Stein leventhal syndrome

Correct Answer - B

Ans, B. Complete mole

Characteristics of complete Mole

Complete H. mole shows no evidence of fetal tissue at all.

Complete hydatiform moles exhibit characteristic swelling and trophoblastic hyperplasia.

Most common karyotype is 46XX.

The molar chromosomes are entirely of paternal origin, although mitochondrial DNA is of maternal origin.

The complete mole arises from an ovum that has been fertilized by a haploid sperm, which then duplicates its own chromosomes called Androgenesis.

The ovum nucleus may be either absent or inactivated.

1615. High chance of rupture in tubal pregnancy are seen *in* which ?

a) Ampulla

b) Isthmus

c) Interstitial

d) Fimbrial

Correct Answer - B

Ans. B. Isthmus

M.C.siteoftubal rupture = Isthmus

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1616. Most common site of ectopic pregnancy is -

a) Tubal

b) Abdominal

c) Ovarian

d) Uterine

Correct Answer - A

Ans, A. Tubal

Most common site of ectopic pregnancy is fallopian tube.

In tubal pregnancy M.C. site is ampulla followed by Isthmus.

1617. % of ectopic pregnancy seen in fallopian tube is?

a) 75%

b) 90%

c) 80%

d) 67%

Correct Answer - B

Ans, B. 90%

M.C. site of ectopic pregnancy = Fallopian tube (97%).

1618. Drugs used in ectopic pregnancy ?

a) PGE₂

b) PGI

c) PGF₂

d) None

Correct Answer - C
Ans. C. PGF₂

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1619. Most common congenital uterine anomaly is ?

a) Bicornuate uterus

b) Septate uterus

c) Unicornuate uterus

d) Arcuate uterus

Correct Answer - B

Ans. B. Septate uterus

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1620. When is copper T inserted ?

- a) 3 days after periods are over
- b) Within 10 days of start of menstrual cycle
- c) PID just before menstruation
- d) Just after menstruation

Correct Answer - B

Ans, B. Within 10 days of start of menstrual cycle

Ideal time for insertion of Cu-T is within 10 days of the start of the menstrual cycle

It has the advantage that cervical canal is dilated, uterus is relaxed and chances of pregnancy are remote.

Post Partum insertion within 48 hours of delivery or 6 weeks after delivery.

Post-MTP insertion immediately following D & E (in early pregnancy)

1621. Most common cause of annular cervix is ?

- a) Obstructive labor
- b) Prepitate labor
- c) Primary cervical dystocia
- d) Iatrogenic

Correct Answer - C

Ans, C. Primary cervical dystocia

- Annular cervix is detachment of the cervix following prolonged labour in primary cervical dystocia.

1622. Intrauterine adhesions best seen by?

a) USG

b) CT

c) Hysteroscopy

d) MRI

Correct Answer - C

Ans. C. Hysteroscopy

Hysteroscopy is the endoscopic technique of visualizing the interior of uterus directly,

It is both diagnostic and therapeutic.

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1623. Insulin resistance in pregnancy is due to ?

a) Estrogen

b) Progesterone

c) HPL

d) GH

Correct Answer - A:C

Ans. C>A. HPL>Estrogen

- During Pregnancy insulin levels are increased because of increased insulin secretion as well as increase in insulin resistance due to a number of contra insulin factors but the most important hormone causing insulin resistance is Human placental lactogen.

1624. Gestational diabetes mellitus ?

- a) Is first recognized during pregnancy
- b) Previous history of IUGR
- c) There is no recurrence of GDM in future pregnancy
- d) No risk of overt diabetes

Correct Answer - A

Ans. A. Is first recognized during pregnancy

Gestational diabetes mellitus is defined as carbohydrate intolerance of variable severity with onset or first recognition during Pregnancy. Pregnancy is a form of stress that can cause latent diabetes to manifest just as do surgical operations or acute infections.

In most of the cases the carbohydrate intolerance reverts by the end of puerperium but this manifestation may be the first indication of diabetes yet to come.

More than half the women with gestational diabetes will develop frank diabetes within the next 20 years.

However in some of these carbohydrate intolerance may persist beyond the puerperium and these are in reality cases of pre-gestational diabetes which have become overt during pregnancy.

1625. True about gestational diabetes is ?

- a) These are increased chances of congenital malformation
- b) Only 2% of women present with overt diabetes
- c) There is chance of macrosomia
- d) Usually diagnosed in early pregnancy

Correct Answer - C

Ans. C. There is chance of macrosomia

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1626. Most common presenting symptom of TB endometritis is -

a) Abdominal pain

b) Infertility

c) Amenorrhoea

d) Vaginal discharge

Correct Answer - B

Ans, B. Infertility

Most common symptom of Genital TB is:-

- Infertility (35-60%) is either due to blockage of fallopian tube or due to loss of tubal function even if tubes are patent.

1627. PID after insertion of IUD is seen in how many weeks?

a) 3

b) 5

c) 7

d) 14

Correct Answer - A

Ans, A. 3

The risk of developing PID is 2-10 times greater among the IUD users.

The risk is more in the first 3 weeks.

Infection with chlamydia and actinomycosis most common.

1628. Acute PID, most common route of spread ?

a) Descending

b) Ascending infection

c) Lymphatics

d) Hematogenous

Correct Answer - B

Ans, B, Ascending infection

M/c route of spread of PID is:-

Ascending infection along with sperms.

All PIDs are sexually transmitted except TB.

1629. Best way to look at endometrial activity is by -

a) HSG

b) Biopsy

c) USG

d) Colposcopy

Correct Answer - B

Ans, B. Biopsy

Endometrial sampling or curettage or biopsy is the best method to assess endometrial activity.

1630. Block given in forceps delivery ?

a) Pudendal

b) Ilio inguinal

c) Genitofemoral

d) Posterior femoral

Correct Answer - A

Ans, A. Pudendal

For forceps operation pudendal block is given supplemented by perineal and labial infiltration.

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1631. Cause of big baby ?

a) Hyperglycemia

b) Hyperinsulinemia

c) Multiparity

d) Post maturity

Correct Answer - A:B:C:D

Ans, All of the above A, B, C, D

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1632. Decubitus ulcer is ?

- a) Due to trauma
- b) Due to venous congestion
- c) Due to friction created by thighs
- d) Due to

Correct Answer - B

Ans, B. Due to venous congestion

Decubitus ulcer is a trophic ulcer always found at the dependent part of the prolapsed mass (in prolapsed uterus).

It is due to decreased circulation due to narrowing of uterine vessels by stretching effect with additional keratinizations, cracks.

1633. Patient with history of vaginal prolapse with ulcer on it. Diagnosis ?

- a) Carcinoma
- b) Pressure erosion
- c) Syphilis
- d) Decubitus ulcer

Correct Answer - D
Ans, D. Decubitus ulcer

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1634. SERMs are ?

- a) Agonist on estrogen receptor
- b) Antagonist on estrogen receptor
- c) Some are agonist some antagonist on estrogen receptor
- d) Used due to reduced chances of hot flushes, thromboembolism

Correct Answer - C

Ans, C, Some are agonist some antagonist on estrogen receptor

SERM's are selective estrogen receptor modulators called SERMs blocks the effects of estrogen in the breast tissue.

They block the effect of estrogen by acting on estrogen receptors.

**1635. Female with hirsutism with
ammenorrhoea and obesity. Diagnosis
?**

a) PCOD

b) Ovarian tumor

c) Androgen insensitivity syndrome

d) Turner syndrome

Correct Answer - A

Ans, A. PCOD

The clinical and laboratory features of the patient described in the question match with those of PCOS as depicted in the table.

So the most appropriate answer is PCOD.

1636. HAIRAN syndrome is seen in ?

a) PCOD

b) Endometriosiis

c) CA ovary

d) Adrenal tumours

Correct Answer - A

Ans, A. PCOD

PCOD is also known as HAIRAN SyNDROME

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1637. Regarding PCOD all are true except ?

a) High FSH/LH

b) High DHEA

c) Raised LH

d) T Estrogen

Correct Answer - A

Ans, A. High FSH/LH

PCOD is also known as HAIRAN SyNDROME

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1638. Which hormone increases in PCOD ?

a) LH

b) FSH

c) Estrogen

d) TSH

Correct Answer - A

Ans, A, LH

Stein leventhal syndrome is also called 'Polycystic Ovarian Syndrome'

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1639. Stein Levinthal syndrome what hormone is raised?

a) LH

b) FSH

c) GnRH

d) Progesterone

Correct Answer - A

Ans, A. LH

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1640. What should not be done during delivery of Rh negative?

a) IV Fluids

b) External version

c) Manual removal of placenta should be done gently

d) Ergometire to be withheld at delivery of ant. shoulder

Correct Answer - A

Ans, A. IV Fluids

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1641. History of yellow green watery discharge and pruritus?

a) Trichomonas vaginalis

b) Candida

c) Bacterial vaginosis

d) Chlamydia trachomatis

Correct Answer - B

Ans. B. Candida

During Rh Pregnancy steps should be taken to prevent fetal maternal bleeding; -

- Precautions during caesarean section to prevent blood spilling into peritoneal cavity
- Prophylactic ergometrine with delivery of ant shoulder to be withheld.
- Amniocentesis should be done after sonographic. Localization of placenta to prevent placental injury.
- Forceful attempt for external version should not be done.
- Manual removal of placenta should be done gently.
- To refrain from abdominal palpation in abruption placenta.

1642. Most common genital infection in pregnancy is ?

a) Candida

b) Gonorrhea

c) Trachoma

d) Cytomegalo virus

Correct Answer - A

Ans, A. Candida

Seventy per cent show typical discharge, which is profuse, thin, creamy or slightly green in colour, irritating and frothy.

The vaginal walls are tender, angry looking and the discharge causes pruritus and inflammation of the vulva.

1643. Decreased fetal heart sound is due to which drug -

a) Oxytocin

b) Sodium bicarbonate

c) IV fluids

d) Iron

Correct Answer - A

Ans, A, Oxytocin

Vaginitis due to candida is more common than trichomonas and is more prevalent in Diabetic pregnancy.

Treatment is miconazole vaginal cream for 7 days.

1644. Dose of mifepristone in MTP is ?

a) 10mg

b) 20 mg

c) 100mg

d) 200mg

Correct Answer - A

Ans, A. 10mg

Decreased fetal heart rate or fetal distress is due to fetal hypoxia.

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1645. A young sexually active female has intensive pruritus and watery discharge, smear shows ?

a) Trichomonas vaginalis

b) Candida vaginitis

c) Gardenlla vaginalis

d) HIV

Correct Answer - D

Ans, D. HIV

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1646. Treatment for trichomonas vaginalis is ?

a) Metronidazole

b) Azithromycin

c) Ciprofloxacin

d) None

Correct Answer - A

Ans. A. Metronidazole

The drug of choice for Trichomonasvaginits is Metronidazole.

1647. Which organism causes puerperal sepsis ?

a) CMV

b) Toxoplasma gondii

c) Group A beta hemolytic streptococci

d) Group B beta hemolytic streptococci

Correct Answer - C

Ans, C. Group A beta hemolytic streptococci

Most common cause of puerperal sepsis is Group A streptococcus. Other organisms that are implicated are: Streptococcus group B, C and G, staphylococcus aureus, E. coli, Enterobacter species and chlamydia trachomatis.

1648. A 40 year old male reported with recurrent episodes of oral ulcers, large areas of denuded skin and flacid vesiculo-bullous eruptions. Which is the most important bed-side investigation helpful in establishing the diagnosis -

- a) Gram staining of the blister fluid
- b) Culture and sensitivity
- c) Skin biopsy and immunofluorescence
- d) Tzanck smear from the floor of bulla

Correct Answer - D

Ans. D. i.e. Tzanck smear from the floor of bulla

1649. Characteristic of chronic eczema ?

a) Erythema

b) Induration

c) Lichenification

d) Edema

Correct Answer - C

Ans. is 'c' i.e., Lichenification

Phase (stage)	Clinical features	Histology
Acute	Vesicles & Erythema Edema & Crusts	Spongiosis (intracellular edema)
Subacute	Erythematous, hyperpigmented plaque Scales & Crusts	Parakeratosis
Chronic	Lichenification	Thickening of stratum malpighi

1650. Dead layer of epidermis ?

- a) Stratum basale
- b) Straum spinosum
- c) Stratum corneum
- d) Stratum granulosum

Correct Answer - C

Ans. is 'c' i.e., Stratum corneum

- Stratum basale, stratum spinosum and stratum granulosum, together form the living layer and constitute the site of synthesis of keratin (Keratin is mostly synthesized in stratum spinosum).
- Stratum corneum is the dead layer.

Layers of epidermis (From deep to superficial)

In palm & sole (5 layers)

Stratum basale
Stratum spinosum
Stratum granulosum
Stratum lucidum
Stratum corneum

Elsewhere (4 layers)

Stratum basale
Stratum spinosum
Stratum granulosum
Stratum corneum

1651. Spongiosis involves ?

a) Stratum basal

b) Stratum carneum

c) Stratum granulosum

d) Stratum spinosum

Correct Answer - D

Ans. is 'd' i.e., Stratum spinosum

- Separation of keratinocytes due to loss of intracellular bridges → Acantholysis
- Intracellular edema of keratinocytes → Ballooning
- **Stratum basale**
- *Acantholytic cells of pemphigus vulgaris* are derived from stratum basal.
- Basal cell degeneration occurs in *Lichen planus*.
- **Stratum spinosum**
- Interstitial (in between the cells) edema → Spongiosis
- Thickening → Acanthosis

Stratum granulosum

- Thickening → Hypergranulosis

Stratum corneum

- Retention of nuclei within cells
- Thickening
- Stratum corneum is involved in

→

Parakerat

→

Hyperkerat

→

Micromun
abscess

Dermatitis

Dermatop

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1652. Lines of Blaschko's are related to ?

a) Keratinocytes

b) Blood vessels

c) Nerves

d) Bones

Correct Answer - A

Ans. is 'a' i.e., Keratinocytes

- Blaschko's lines correspond to the pathways followed by keratinocytes migrating from neural crest during embryogenesis.
- The lines follow a V-shape over spine, an S-shape on abdomen, inverted U-shape from breast area to upper arm and perpendicular down the front and back of the lower extremities.
- A number of inflammatory conditions can follow Blaschko's lines -
 1. Lichen striatus
 2. Linear lichen planus.
 3. Inflammatory linear verrucous epidermal naevus (ILVEN).
 4. Blaschko dermatitis (Blaschitis).
 5. Incontinentia pigmenti.
 6. Goltz syndrome.
 7. Linear morphoea.
 8. Segmental vitiligo.
 9. Focal dermal hypoplasia.
 10. CHILD syndrome.
 11. Hypomelanosis of Ito.
 12. Linear cutaneous lupus erythematosus

1653. Difference in acne rosacea & acne vulgaris-

a) Pustule

b) Erythema

c) Papule

d) Absence of comedone

Correct Answer - D

Ans. is 'd' i.e., Absence of comedone

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1654. Which hormone is responsible for acne ?

a) Estrogen

b) Thyroid

c) Testosterone

d) Gonadotropins

Correct Answer - C

Ans. is 'c' i.e., Testosterone

Predisposing factors for Acne vulgaris

- Genetic factors
- Hormones -4 Androgens, glucocorticoids.
- Psychological stress and depression.
- Environmental factors High temperature & humidity.
- Cosmetics -3 Containing lenolin, petroleum, vegetable oils.
- Infection --> Propionibacterium, Pityrosporum, Staph. epidermidis.
- Menstural cycle -4 Premenstural aggravation.
- Hyperkeratosis of pilosebaceous ostia.
- Drugs Antepileptics (Carbamazepine, phenytoin, phenobarbitone), antitubercular (INH, rifampin, ethionamide), antidepressants, cyclosporine, Vitamin B₁₂. Cough syrups containing halogens (Iodides, bromides).

1655. Eyebrows don't grow beyond certain length as they have a short ?

a) Anagen phase

b) Telogen phase

c) Telogen phase

d) Exogen phase

Correct Answer - A

Ans. is 'a' i.e., Anagen phase

- Hair grows in cycles of various phases. Anagen is growth phase. Catagen is involuting or regression phase. Telogen is resting phase. Exogen is shedding phase.
- Normally 90% of the follicles are in anagen phase, 10-14% are in Telogen and 1-2 % are in catagen.
- The cycles duration is variable for the different parts of the body. For eyebrows, the cycle is finished in 3-4 months while for scalp it takes 3-4 years to finish.
- This is the reason why eyebrows have much shorter length limit as compared to scalp hair.

1656. Brown macular pigmentation in malar area in a pregnant female is due to ?

a) Acne rosacea

b) Cholasma

c) Acanthosis nigricans

d) Urticaria pigmentosa

Correct Answer - B

Ans. is 'b' i.e., Cholasma

Chloasma (Melasma)

- Melasma (Chloasma) is the most common cause for facial pigmentation in Indian patients. There is Brown macular pigmentation on the malar area of face, forehead and sometimes chin. It usually affects young and middle aged women. When melasma results from pregnancy it is referred as chloasma.
- Two major etiological factors are : -
 - 1. Hormonal (estrogen) --> Appears in pregnancy or in person on OCPs.
 - 2. Sun exposure ---> Especially UVB.
- For treatment Combination of topical hydroquinone (2-4%), retinoic acid and a topical corticosteroids. Other drugs are --> Glycolic acid (4-10%), Azelic acid, topical vitamin C.

1657. Which of the following cause non-cicatracial alopecia ?

a) Tenia capitis

b) SLE

c) Alopecia areata

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

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1658. Nail pitting is caused by all except ?

a) Lichen planus

b) Hyperthyroidism

c) Fungal infection

d) Pityriasis Rosacea

Correct Answer - D

Ans. is 'd' i.e., Pityriasis Rosacea

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1659. Hanifin & Rajke is the diagnostic criteria for

a) Atopic dermatitis

b) Contact dermatitis

c) Urticaria

d) Erythroderma

Correct Answer - A

Ans. is 'a' i.e., Atopic dermatitis

- Hanifin and Rajka criteria is for diagnosis of atopic dermatitis.

Diagnostic criteria (Hanifin and Rajka)

Based mainly on clinical experience

Major criteria

1. Family history of atopy
2. Chronicity
3. Pruritus
4. Typical morphology and distribution

Minor criteria

1. Dry skin
2. Cheilitis
3. Elevated edge
4. Dennie's line/dennie morgan fold (infra orbital fold)
5. White dermographism
6. Peripheral eosinophilia
7. Immediate (type I) hypersensitivity
8. Facial pallor, orbital darkening
9. Food intolerance
10. Conjunctivitis (recurrent), keratoconus, cataract
11. Pityriasis alba

- 2. Hand dermatitis
- 3. Recurrent infections
- At least 3 major or 2 major plus 2 minor criteria are necessary for diagnosis

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1660. Most common metal in contact allergic dermatitis is?

a) Gold

b) Silver

c) Aluminium

d) Nickel

Correct Answer - D

Ans. is 'd' i.e., Nickel

Contact dermatitis

- Contact dermatitis is localized rash or irritation of skin caused by contact with a foreign substance. Contact dermatitis is a localized disease, i.e., lesion occurs at the site of contact. However, in severe cases, the lesions may extend outside the contact area or it may become generalized (referred to as id eruption).
- Contact dermatitis is mainly of two types : ?
 - A. Irritant contact dermatitis
- Due to direct irritant action of the material e.g. Solvents, Alkalis, Detergents. Most common sites are hands & forearms.
 - B. Allergic contact dermatitis
- It is due to delayed hypersensitivity (type IV hypersensitivity) to a particular antigen in a sensitized individual. The most common allergens causing allergic contact dermatitis are pollen and metals : ?
 - .. Parthenium (Congress grass)
 - ?. Nickel

1661. Grattage test is used for-

- a) Tinea capitis
- b) Lichen planus
- c) Pemphigus vulgaris
- d) Psoriasis

Correct Answer - D

Ans. is 'd' i.e., Psoriasis

Bedside tests for psoriasis

- Two bedside tests can be done to confirm the clinical diagnosis of psoriasis : -
 - i. Grattage test**
- Scraping the lesion with a glass slide causes accentuation of the silvery scales.
- ii. Auspitz's Sign**
- Scraping the lesion with glass slide causes accentuation of silvery scales (as in Grattage test). If scraping is continued further, a glistening white adherent membrane (Burlkey's membrane) appears. On removing Burlkey's membrane punctate (fine pin point) bleeding become visible, which is referred to as Auspitz's sign.

1662. Treatment of choice for lichen planus ?

- a) Topical corticosteroids
- b) Systemic corticosteroids
- c) Antihistaminics
- d) Acitretin

Correct Answer - A

Ans. is 'a' i.e., Topical corticosteroids

Treatment of Lichen planus

- The first line treatment of lichen planus are topical corticosteroids.
- Second choice would be systemic corticosteroids for symptom control and possibly more rapid resolution.
- Oral antihistaminics are given for pruritic.
- PUVA can be used for extensive lesions.
- Acitretin can be used for mucosal lesions.

1663. Nikolsky's sign is seen in ?

a) Pemphigus

b) Herpes zoster

c) Bullous impetigo

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Nikolsky's sign is seen in ?

- Pemphigus
- Toxic epidermal necrolysis
- Bullous impetigo
- Steven Johnson syndrome
- Staphylococcus scalded skin syndrome
- HSV & VZV infection
- Epidermolysis bullosa
- Malignancy (leukemia)
- Mycosis fungoides
- Bullous lichen planus

1664. Tzank smear in varicella-zoster shows ?

a) Acantholysis

b) Spongiosis

c) Multinucleated Giant cell

d) Necrotic cell

Correct Answer - C

Ans. is 'c' i.e., Multinucleated Giant cell

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1665. Acantholysis is /are not seen in :

- a) Lichen planus
- b) Bullous pemphigoid
- c) Dermatitis herpetiformis
- d) Hailey-Hailey disease
- e) Pemphigus vulgaris

Correct Answer - A:B:C

Ans. (A) Lichen planus (B) Bullous pemphigoid (C) Dermatitis herpetiformis

Acantholysis:

- Separation of epidermal cells from each other.
- Acantholytic disorders includes Pemphigus family (including paraneoplastic pemphigus), eosinophilic spongiolysis, Darier's disease, Hailey-Hailey's disease (Familial benign chronic pemphigus) and transient acantholytic dermatosis (Grouer's disease), as well as specific histological patterns such as focal acantholytic dyskeratosis and epidermolytic hyperkeratosis.

1666. Erythema multiforme is most commonly caused by?

a) Herpes simplex

b) Idiopathic

c) TB

d) Drugs

Correct Answer - B

Ans. is 'b' i.e., Idiopathic

- Idiopathic erythema multiforme is the most common cause of EM.
- Herpes simplex is the most important infectious cause of EM.

Causes of Erythema multiforme

- Idiopathic —) Most common cause
- Viral —> HSV (most important) HBV, Mumps, Adenovirus
- Bacteria → Streptococci, tuberculosis
- Fungal —> Coccidioidomycosis, Histoplasmosis.
- Drugs ---> Antibiotics (Sulphonamide), Phenytoin, NSAIDS.
- Autoimmune disease —> SLE, thyroiditis, RA
- Others —> Sarcoidosis, Pregnancy, Malignancy.

1667. Treatment of dermatitis herpetiformis ?

a) Gluten free diet

b) Dapsone

c) Sulfonamide

d) All of the above

Correct Answer - A

Ans. is 'a' i.e., Gluten free diet

- Tinea capitis shows greenish fluorescence.
- Erythrasma gives a coral pink hue.
- Pseudomonas infection gives a yellowish-green colour

**1668. Sex worker with discharging ulcer,
gram negative diplococci & growth on
modified Thayer martin media.
Diagnosis ?**

a) N. gonococci

b) Syphilis

c) LGV

d) Chaneroid

Correct Answer - A

Ans. is 'a' i.e., N. gonococci

• **Information in this question are ?**

.. Gram negative diplococci.

?. Growth on modified Thayer-martin media.

• o Neisseria gonorrhoeae is a gram negative diplococci and Thayer-martin medium is the selective medium for gonococci.

Lab diagnosis of gonorrhea

• Urethral discharge is the most important specimen.

• Transport media

.. La It processing is to occur within 6 hrs ---> Stuart medium or A mies medium.

?. If processing is to occur > 6 hrs —> JEMBEC or Gono - Pak system (media with self - contained CO₂ -generating system).

• **Culture media**

.. In acute cases --> Chocolate agar or Muller - Hinton agar.

?. In chronic cases ---> Selective medium - Thayer martin medium.

• Normally the diagnosis of gonorrhoea is made by isolating the organism in culture.

- It may not be possible to obtain gonococci in culture from some chronic cases or from patients with metastatic lesions such as arthritis. Serological test may be of value in such instances.
 - In serological tests antibodies to gonococcal pili, LPS and outer membrane proteins are detected. o Various tests are ?
 - 1. Complement fixation test
 - 2. Precipitation
 - 3. Passive agglutination
 - 4. Immunofluorescence
 - 5. Radioimmunoassay
 - 6. Enzyme - linked
 - 7. immunosorbent assay (ELISA)
- However, no serological test has been found useful for routine diagnostic procedure. Immunoblotting

1669. Drug of choice for treating chylmydia with gonorrhea is ?

a) Ciprofloxacin

b) Norfloxacin

c) Nalidixic acid

d) Doxycycline

Correct Answer - D
Ans. is 'd' i.e., Doxycycline

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1670. Single dose treatment for gonorrhea ?

a) Azithromycin

b) Tetracycline

c) Ceftriaxone

d) Erythromycin

Correct Answer - C

Ans. is 'c' i.e., Ceftriaxone

- For uncomplicated gonococcal infection, single dose of IM ceftriaxone is the drug of choice.
- It is given along with azithromycin (single dose) or doxycycline (BD for 7 days) to cover chlamydial infection

1671. Feature of Granulomatosis with polyangiitis:

- a) Nasal polyp
- b) Perforated Nasal septum
- c) Persistent sinus
- d) Crusting of nasal mucosa
- e) Collapse of nasal bridge

Correct Answer - B:C:D

Answer- (B) Perforated Nasal septum (C) Persistent sinus (D) Crusting of nasal mucosa

Granulomatosis with polyangiitis (Wegener) is a distinct clinicopathologic entity characterized by granulomatous vasculitis of the upper and lower respiratory tracts together with glomerulonephritis.

Disseminated vasculitis involving both small arteries and veins may occur.

Nasal findings include crusting granulations, septal perforation & a saddle nose

Destruction of the septum with a characteristic implosion of the nasal bridge.

**1672. man with pain in defecation, no gastrointestinal symptoms, clustered ulcers extending into anal canal.
Diagnosis-**

a) CM V

b) Gonorrhea

c) Herpes genitalis

d) HIV

Correct Answer - C

Ans. is 'c' i.e., Herpes genitalis

- Herpes genitalis is a sexually transmitted disease, characterized by appearance of multiple painful vesicles in clusters in genital area which later on may ulcerate. These small ulcers may combine to form a large ulcer. First attack of this infection may be associated with flu like symptoms but GIT symptoms are usually absent.
- Gonorrhea is characterized by acute anterior arthritis associated with thick yellow urethral discharge. Perianal ulceration is not a feature of gonorrhea.
- Although HIV can be considered in the differential diagnosis of Perianal ulcers, but is usually associated with GIT symptoms.
- Perianal ulceration is not a feature of CMV infection.

1673. Ulceronecrotic nodule is seen in ?

a) Lucio leprosy

b) Lucio leprosy

c) Indeterminate leprosy

d) Histoid leprosy

Correct Answer - A

Ans. is 'a' i.e., Lucio leprosy

Lucio phenomenon

- It is found in lucio leprosy with type 2 lepra reaction. It is prevalent in Mexico.
- Characterized by painful tender red patches particularly on extremities which later on become necrotic and finally develop into brown black eschar.
- Ulcers are more persistent on legs.
- Tuberculoid and indeterminate leprosy are characterized by hyperpigmented macule with impairment of sensations.
- In histoid leprosy, classical feature is erythematous shiny red subcutaneous or cutaneous nodules, esp over the extensor aspect of extremities, back, buttocks & face. Ulceration is unusual.

1674. Nerves are not involved in ?

a) Tuberculoid leprosy

b) Lepromatous leprosy

c) Indeterminate leprosy

d) Borderline tuberculoid leprosy

Correct Answer - C

Ans. is 'c' i.e., Indeterminate leprosy

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1675. Match stick test is positive in ?

a) Rhinophyma

b) Rhinosporiodosis

c) Lupus vulgaris

d) P. versicolor

Correct Answer - C

Ans. is 'c' i.e., Lupus vulgaris

Lupus vulgaris

- Lupus vulgaris is a chronic and progressive form of cutaneous tuberculosis that occurs in tuberculin sensitive patients. It is the most common type of cutaneous tuberculosis and has most variable presentation. Seen in children and young adults, though no age is exempted. Occurs on exposed area like face (nose, eyelid, pinna); and sometimes on buttock, trunk.
- Lesions are usually solitary and characterized by : -
 1. Reddish brown (erythematous)
 2. Annular in shape
 3. Indurated
 4. Slowly increases in size (gradually progressive).
 5. Healing with tissue paper like scarring at centre (most common) or edge.
 6. Peripheral crusting
 7. Blanching with glass slide (diascopy) will reveal grey green foci
- Apple jelly nodules.
- Match-stick test positive ---> Apple jelly nodule has no resistance to pressure by a sharp match-stick.
- Reappearance of new nodules within previously atrophic or scarred lesions is characteristic. Cartilage (Ear, nose) in the affected area is

progressively destroyed (Lupus vorax); bone is usually spared. Buccal, nasal and conjunctival mucosa may be involved primarily or by extension. Treatment is antitubercular drugs (ATT).

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1676. Circle of Hebra is involved in ?

a) Pediculosis corpora

b) Pityriasis versicolor

c) Scabies

d) Leprosy

Correct Answer - C

Ans. is 'c' i.e., Scabies

Scabies

- Scabies is caused by mites of the family Sarcoptidae, which includes *Sarcoptes scabiei*, the scabies mite. Usually affects children but can occur at any age. More common in low socioeconomic strata as overcrowding and poor hygiene facilitate the spread. The most important mean of spread is direct contact with the infected individual. Scabies is a water shed disease which occurs due to inadequate use of water and improper hygiene.

Clinical features :?

- Severe itching is the most prominent clinical feature and has following characteristics
 - Worse at night
 - Generalised
 - Affecting several family members
- 2. Body areas most commonly involved are web spaces of fingers, wrists, elbow, axilla and groin area, areas known as circle of Hebra.
- 3. Burrow is serpentine (S. shaped), thread like grey brown line which represents the intraepidermal tunnel created by moving female mite in stratum corneum. Burrow is pathognomic sign of scabies. Burrows are very difficult to demonstrate in infants.
- 4. Pustules and papulovesicular eruptions due to hypersensitivity to mite

title

5. Pustules can occur due to seceondary infection
6. Excoriation and scratch marks
7. History of involvement of family members

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1677. Scalp and face are involved in ?

a) Adult scabies

b) Nodular scabies

c) Infantile scabies

d) None

Correct Answer - C

Ans. is 'c' i.e., Infantile scabies

Type	Feature
o Infantile scabies	Scalp, face, palms and soles are involved
o Norwegian scabies	Crusted hyperkeratotic lesions on face , palms, soles, nails. Itching is not prominent. Mites are found in thousand, most severe form of scabies
Crusted scabies	Extensive crusts
Nodular scabies	Extensive crusts
Genital scabies	Extensive crusts
Animal scabies	History of contact with cat or dog. Atypical presentation

1678. Treatment of choice of scabies in pregnancy ?

a) Ivermectin

b) Gamma-benzen hexachloride

c) Permethrin

d) Gamma-benzen hexachloride

Correct Answer - C

Ans. is 'c' i.e., Permethrin

'Permethrin is the drug of choice for infants as well as pregnant and nursing women'. — Evidence based dermatology

- Alternatives are benzyl-benzoate and crotamiton.
- Gamma benzen hexachloride and ivermectin are not recommended.

1679. Skin scrapping & KOH mounting is done for ?

a) Leprosy

b) Varicella

c) Fungus

d) HSV

Correct Answer - C

Ans. is 'c' i.e., Fungus

Laboratory diagnosis of fungal infection

- Laboratory diagnosis of fungal infection depends on : ?
 1. Recognition of the pathogen in tissue microscopy : - Tissue specimens, such as skin scraping, are generally examined as wet mounts after treatment with 10% KOH. KOH (alkali) digests cells and other tissue materials, enabling the fungus elements to be seen clearly. Periodic acid schiff (PAS) and methanamine silver are two most commonly used stains for the demonstration of fungal elements in tissue sections.
 2. Culture : - Culture media used most common in mycology is Sabauraud's glucose agar.
 3. Serology : - ELISA complement fixation test, Immunodiffusion.
 4. PCR : - Detection of fungal DNA is clinical material.

1680. Dermatophytes affect ?

a) Keratin

b) Dermis of skin

c) Stratum basal

d) Stratum basal

Correct Answer - A

Ans. is 'a' i.e., Keratin

- Dermatophytes are keratinophilic fungi, living only on the superficial dead keratin. That is why they infect skin, hair and nail. In skin they infect most superficial layer of the epidermis i.e. stratum corneum. They do not penetrate living tissues. Dermatophytes cause a variety of clinical conditions, collectively known as dermatophytosis, tinea or ringworm. Dermatophytes have been classified into 3 genera :- trichophyton, microsporum, epidermophyton.
 1. Trichophyton affects;- skin, hair, nails
 2. Microsporum affects ; - skin, hair (nails are not affected)
 3. Epidermophyton affects:- skin, nails (hair are not affected)
- Deep fungal infections (eg:- mycetoma, chromoblastomycosis, phaeohyphomycosis, sporotrichosis, lobomycosis, rhinosporidiosis) involve subcutaneous tissue.
- Dermatophytosis is itchy and scaly

1681. The following drug is effective in treatment of pityriasis versicolor ?

a) Ketoconazole

b) Metronidazole

c) Griseofulvin

d) Chloroquine

Correct Answer - A

Ans. is 'a' i.e., Ketoconazole

Pityriasis versicolor (Tinea versicolor)

- Tinea versicolor is a misnomer as it is not caused by dermatophyte; Pityriasis versicolor is more appropriate term. It is caused by a nondermatophyte fungus called *Pityrosporum ovale* (*Malassezia furfur*). It usually affects young adults.

Clinical features

- There are multiple small scaly hypopigmented macules (macules may be hyperpigmented also). Scaling is furfuraceous or rice powder like. Macules start around the hair follicles and then merge with each other to form large areas. Affects trunk and shoulders (mainly chest and back). There may be loosening of scales with finger nails -4 Coupled onle or stroke of nail. Lesions are recurrent in nature (may reappear after treatment).

Diagnosis of P.versicolor

- Examination of scales in 10% KOH shows short hyphae and round spores (Sphagetti and meat ball appearance). Wood's lamp shows apple green fluorescence (blue-green fluorescence). Skin surface biopsy —) A cyanoacrylate adhesive (crazy glue) is used to remove the layer of stratum corneum on glass slide and then stained with PAS reagent.

Treatment of P.versicolor

1. Systemic agents : - Systemic azoles provide a convenient therapeutic option. Drugs used are ketoconazole, Fluconazole or intraconazole.
2. Topical antifungals :- Topical antifungals used are : -
 - i. Azoles —> Clotrimazole, econazole, Miconazole, Ketoconazole.
 - ii. Others —> Selenium Sulfide, Sodium thiosulphate, whield's ointment (3% salicylic acid + 6% Benzoic acid).

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1682. All are seen in Behchets syndrome except

a) Genital ulcers

b) Genital ulcers

c) Oral ulcers

d) Pyoderma gangrenosum

Correct Answer - D

Ans. is 'd' i.e., Pyoderma gangrenosum

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1683. Pathergy test is used for ?

a) Reither's syndrome

b) Bechet's syndrome

c) Lichen planus

d) Atopic dermatitis

Correct Answer - B

Ans. is 'b' i.e., Bechet's syndrome

Criteria for diagnosis of Bechet's disease

- Recurrent oral ulcer for at least 3 times in 12 months.
- Plus any two of the followings :?
 1. Recurrent genital ulcer.
 2. Eye inflammation with loss of vision.
 3. Characteristic skin lesion (erythema nodosum).
 4. Positive pathergy test (skin prick test).

1684. Erythroderma % of skin involved is ?

a) >90%

b) <30%

c) 30-60%

d) 60-70%

Correct Answer - A

Ans. is 'a' i.e., >90%

Erythroderma (generalized exfoliative dermatitis)

- Erythroderma is the term used when the majority of the skin is erythematous red color and usually associated with crusts, there may be associated erosions, pustules, shedding of nails or hair. "Exfoliative dermatitis (erythroderma) refers to a scaling erythematous dermatitis involving 90% or more of the cutaneous surface".
- Exfoliative dermatitis is characterized by : -
 - .. Erythema
 - .. Scaling
- This often obscures the primary lesions, For example in psoriasis the characteristic lesion is erythematous plaque with silvery scale, on extensors. When erythema occurs as a complication, most of the cutaneous surface is involved by erythema which obscures the primary lesions of psoriasis.

Causes of Erythroderma (exfoliative dermatitis)

1. Skin disorders

- Psoriasis
- Dermatitis/Eczema (atopic, stasis, contact, seborrheic)
- Pityriasis rubra pilaris

- Lichen planus
 - 2. Systemic diseases —> Cutaneous T-cell lymphoma
 - 3. Drugs —> Gold, Allopurinol, Phenytoin, penicillin, Sulfonamides.
 - 4. Idiopathic (secondary to solid tumors of lung, liver, prostate, thyroid, colon).
- Treatment of erythroderma (exfoliative dermatitis)**
- Topical corticosteroids are the primary category of medication used to treat exfoliative dermatitis. A sedative antihistaminic may be a useful adjunct for pruritic patients. Systemic antibiotics may be used if infection is suspected.
 - Systemic corticosteroids may be useful in severe disease for remission induction, but not for maintenance. Systemic corticosteroids should not be used in psoriasis (psoriatic erythroderma); Acitretin or methotrexate are preferred.

1685. Treatment of graunolma inguinale is ?

a) Tetracycline

b) Azithromycin

c) Clarithromycin

d) Streptomycin

Correct Answer - B

Ans. is 'b' i.e., Azithromycin

Granuloma inguinale or Granuloma venerum or Donovanosis

- Caused by Calymmatobacterium granulomatis, a gram negative intracellular bacteria.
- IP is 1- 4 weeks.
- Begins as one or more subcutaneous nodules that erode through skin to produce ulcer. Ulcer has following characteristics.
 1. Painless
 2. Bleeding with red granulation tissue
 3. Indurated
- Subcutaneous granulomas of inguinal region in Donovanosis look like enlarged lymph nodes but these are not enlarged lymph nodes. Therefore, these are known as Pseudobubos. Sites of the lesions are genitalia (90%), inguinal (10%), and anal regions. Complications are pseudoelephantiasis, phimosis, paraphimosis.

Diagnosis

- Preferred method is demonstration of typical intracellular Donovan Bodies within large mononuclear cells visualised in smear prepared from lesion or biopsy specimen. It shows safety pin appearance.

Treatment

- Azithromycin is the DOC. Alternatives are doxycycline (2nd choice) and chloramphenicol.

- Streptomycin, once used, is not used now.

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1686. A 15cm hyperpigmented macule on an adolosent male undergoes changes such as coarceness, growth of hair & acne. Diagnosis is ?

a) Melanocytic nevus

b) Becker nevus

c) Sebaceous nevus

d) Sebaceous nevus

Correct Answer - B

Ans. is 'b' i.e., Becker nevus

Becker Nevus

- Usually starts in adolescence as an irregular smooth hyperpigmented macule.
- Usually involves shoulder, anterior chest and scapular region, although any part of the may be involved.
- Slowly grows in size of a palm wile acquiring thick dark hair.
- Often lesion resembling acne vulgaris in different stages may appear on surface.
- No treatment is required.

1687. 15 mm/cm hyperpigmented lesion on shoulder enlarging and hair over it ?

a) Melanocytic nevus

b) Becker nevus

c) Sebaceous nevus

d) Comedo nevus

Correct Answer - B

Ans. is 'b' i.e., Becker nevus

Becker Nevus

- Usually starts in adolescence as an irregular smooth hyperpigmented macule.
- Usually involves shoulder, anterior chest and scapular region, although any part of the may be involved.
- Slowly grows in size of a palm while acquiring thick dark hair.
- Often lesion resembling acne vulgaris in different stages may appear on surface.
- No treatment is required.

1688. On back, big black patch diagnosis is ?

- a) Seborrheic melanosis
- b) Becker nevus
- c) Lichen planus pigmentosus
- d) Pityriasis versicolor

Correct Answer - B

Ans. is 'b' i.e., Becker nevus

Becker Nevus

- Usually starts in adolescence as an irregular smooth hyperpigmented macule.
- Usually involves shoulder, anterior chest and scapular region, although any part of the may be involved.
- Slowly grows in size of a palm while acquiring thick dark hair.
- Often lesion resembling acne vulgaris in different stages may appear on surface.
- No treatment is required.

Seborrheic melanosis

- Brownish black pigmentation typically distributed over seborrheic areas (forehead & beard, retro auricular folds, neck, upper part of chest, interscapular areas) accompanied by erythema and itching.

Lichen planus pigmentosus

- Hyperpigmented dark brown or slate grey macules distributed mainly over exposed areas and flexures.

Pityriasis versicolor

- Dark brown to black overlapping confluent patches with satellite lesions, mainly over upper trunk and extending to upper arms, neck and abdomen.

1689. Frequency of woods lamp is ?

a) 365 nm

b) 400 nm

c) 320 nm

d) 200 nm

Correct Answer - A

Ans. is 'a' i.e., 360 nm

Wood's lamp

- Wood's lamp has an ultraviolet light lamp (365 nm) with a filter containing nickle oxide and barium silicate. The UV light, when absorbed by certain substances, fluorescences in dark and the color of fluorescence is useful in diagnosis of the condition.

Condition

Fluorescent colours

Tinea capitis

Bright yellow green

Erythrasma

Coral red or pink

Vitiligo

Milky white

Albinism

Blue white

Leprosy

Blue white

Tuberous sclerosis

Blue white

Pseudomonas infection

Greenish white
Porphyria
Pinklorange
Tinea versicolor
Golden yellow

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1690. Drug causing fixed drug eruption ?

a) Sulfonamide

b) Erythromycin

c) Aminoglycoside

d) None

Correct Answer - A

Ans. is 'a' i.e., Sulfonamide

Drugs causing fixed drug eruption

- Paracetamol (Phenacetin)
- Sulfonamides
- NSAIDs
- Aspirin
- Barbiturates
- Dapsone
- Tetracyclines
- Phenylbutazone

1691. Drug causing exanthema ?

a) Atropine

b) Phenytoin

c) Sulfonamide

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

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1692. Schamberg's purpura are seen on ?

a) Face

b) Feet

c) Chest

d) Arms

Correct Answer - B

Ans. is 'b' i.e., Feet

Schamberg's purpura

- Most common form of pigmented purpura dermatosis (PPD).
- Punctate purpura macules develop on lower extremities, particularly around ankles & pretibial region.
- Mostly asymptomatic

1693. Not a cutaneous porphyria ?

- a) Erythropoietic porphyria
- b) Hereditary coproporphyria
- c) Congenital erythropoietic porphyria
- d) Sideroblastic anemia

Correct Answer - B

Ans. is 'b' i.e., Hereditary coproporphyria

Porphyrrias

- Porphyrrias are heterogenous group of disorders characterized by defective metabolism of porphyrins. Porphyrins are important intermediates in biosynthesis of heme from glycine and succinyl CoA. Each step is controlled by specific enzyme. So, porphyrias are due to inherited or acquired deficiency of enzymes in heme biosynthetic pathways (also called porphyrias pathway). They manifest with either neurological complications or skin problems (or rarely both). Based on the site of overproduction and accumulation of porphyrins, porphyrias are broadly classified as :?

A. Acute (hepatic porphyria)

- 1. Acute intermittent porphyria
- 2. 5-ALA dehydratase deficiency
- 3. Hereditary Coproporphyria
- 4. Variegate porphyria
- 5. Porphyria cutanea tarda

B. Cutaneous (erythropoietic) porphyria

- 1. Erythropoietic protoporphyria
- 2. Congenital erythropoietic porphyria
- 3. X-linked sideroblastic Anemia

- The acute (hepatic) porphyrias primarily affect nervous system

resulting in abdominal pain, vomiting, acute neuropathy, seizures, muscle weakness, psychiatric/mental symptoms (i.e., Hallucination, depression, anxiety, paranoia); and autonomic nervous disturbances like hypertension, tachycardia, constipation, arrhythmias, sweating.

- The cutaneous (erythropoietic) porphyrias primarily affect skin causing photosensitivity (photodermatitis) blisters, itching, maculopapular rash. There is no abdominal pain.
- There are some variation in above presentation.
- .. Following two types of hepatic (acute) porphyrias also affect skin : -
Hereditary coproporphyria and variegated porphyria. Therefore these two have both neuropsychiatric as well as skin manifestations.
- 2. Porphyria cutanea tarda (a hepatic porphyria) does not have neuropsychiatric symptom, rather it has only skin manifestation.
- 3. X-linked sideroblastic anemia (an erythropoietic porphyria) has neither neuropsychiatric nor skin symptoms.

1694. Which of the following ultra-violet radiation cause most skin disorder ?

a) UV-A

b) UV-B

c) UV-C

d) None

Correct Answer - B

Ans. is 'b' i.e., UV-B

Ultraviolet radiation (UVR)

- UVR is electromagnetic radiation with wavelength (200-400 nm) shorter than visible light, but longer than x rays. There are three segments of UVR.
 1. UV-C/Short wave UV-radiation (200-290 nm)
- It is most dangerous as it has serious effects on the skin. But, It is not medically important as it is absorbed by ozone layer and hence does not reach the surface of earth in measurable amounts.
 2. UV-B/medium wave UV-radiation (290-320 nm)
- Medically most important UVR as it causes most of the dermatoses, e.g., sunburn, tanning, photoaging. It is absorbed in epidermis. It is used in phototherapy as narrow band UV-B (NBUVB) which has wave length of 311 nm.
 3. UV-A/Long wave UV-radiation (320-400 nm)
- It is absorbed in dermis. It is further divided into : ?
 - .. UVA-2 ----> 320-340 nm
 - ?. UVA-1 ----> 340-400 NM
- Wood's lamp uses UVA-1(365 NM). UVA is also used in photochemotherapy (PUVA).

1695. Which of the following porphyrias is not inherited as an Autosomal Dominant disorder-

a) Acute Intermittent Porphyria

b) Congenital Erythropoietic Porphyria

c) Porphyria Cutanea Tarda

d) Hereditary Coproporphyria

Correct Answer - B

Ans. is 'b' i.e., Congenital erythropoietic porphyria

Inheritance of Porphyrias

Autosomal dominant

Autosomal

Recessive

X-linked

o Acute intermittent porphyria (AIP)

o ALA dehydratase

deficiency

o X-linked protoporphyria

o Porphyria cutanea Tarda (PCT)

o Congenital

erythropoietic porphyria

o Hereditary coproporphyria (HCP)

o Erythropoietic

protoporphyria o Variegate porphyria (VP)

1696. Lovibond profile sign is seen in ?

a) Koilonychia

b) Platynochia

c) Clubbing

d) Onycholysis

Correct Answer - C

Ans. is 'c' i.e., Clubbing

Clinical indicators of clubbing are Lovibond profile sign and curth's modified profile sign".

- Lovibond angle is the angle located at the junction between the nail plate and proximal nail fold. It is normally less than 160° . In clubbing, the angle exceeds 180° (Lovibond profile sign).

1697. Acanthosis nigricans is seen in ?

- a) Diabetes
- b) GIT cancer
- c) Hypothyroidism
- d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

Acanthosis nigricans

- Acanthosis nigricans is a brown to black, velvety hyperpigmentation of the skin. It is usually found in body folds, such as posterior & lateral folds of neck, axilla, groin, umbilicus, forehead. It typically occurs in individuals younger than 40 years of age.
- Histopathologically papillomatosis is characteristically seen; however, there is no hypermelanosis and there is only mild acanthosis, if present.
- It is associated with
 1. Obesity (most common)
 2. Endocrinopathies —> Hypothyroidism, hyperthyroidism, insuline resistance diabetes, Cushing's disease, PCOD, Bloom syndrome.
 3. Internal malignancy —> Gastric adenocarcinoma

1698. Potato nose is seen in ?

a) Acne vulgaris

b) Rhinosporoidosis

c) Acne rosacea

d) Lupus vulgaris

Correct Answer - C

Ans. is 'c' i.e., Acne rosacea

Acne rosacea

- Acne rosacea, commonly called *rosacea*, is a chronic non-curable skin disease with *periodic ups and down*.
- It occurs in middle age (30-50 years). It is more common in females, but is *more severe in males*.
- Rosacea is a centrofacial disease, i.e., it involves the central face → Cheeks, Chin, Forehead, Nose, making typical *cruciate pattern* of involvement.
- Periorbital & perioral areas are spared.
- Clinical features are *intermittant flushing* followed by more permanent erythma and telangiectasia.
- On this back-ground, erythmatous papules, papulo pustules and rarely nodules develop.
- Lesions may be exacerbated by light (photosensitive) and spicy foods.
- **Complications are : ?**
 - .. Rhinophyma : - Rhinophyma is large, bulbous, ruddy appearance of nose caused by granulomatous infiltration of skin. It is slowly progressive condition due to hypertrophy of sebaceous gland on the tip of nose. It is also known as Potato nose.
 - ?. Ophthalmologic : - Blephritis, Conjunctivits, Keratitis,.

3. Lymph edema : - Infra-orbital and on forehead.

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1699. Keivms skin test is used for diagnosis of

a) Sarcoidosis

b) Wegeners granulomatosis

c) Graves disease

d) None

Correct Answer - A

Ans. is 'a' i.e., Sarcoidosis

- Kveim test (Nickerson-kveim or Kveim-Siltzbach test) was a skin test used to detect sarcoidosis.
- It is not used know.

1700. The term "balanced anaesthesia" has been given by?

a) Simpson

b) Fischer

c) Lundy

d) Mortan

Correct Answer - C

Ans. is 'c' i.e., Lundy

- Term 'balanced anaesthesia' was introduced by Lundy in 1926.
Balanced anaesthesia
- The cardinal feature of general anaesthetics are : ?
 1. Loss of all sensations, especially pain
 2. Sleep (unconsciousness) and amnesia
 3. Immobility and muscle relaxation
 4. Abolition of reflexes
- In modern practice of balanced anaesthesia these modalities are achieved by using combination of inhaled and iv.drugs.

1701. Ether was first used as an anaesthetic by?

a) Priesly

b) Morton

c) Wells

d) Simpson

Correct Answer - B

Morton REF: [http://en.wikipedia.org/wiki/William_T. G_ Morton](http://en.wikipedia.org/wiki/William_T._G._Morton)

William Thomas Green Morton (August 9, 1819 - July 15, 1868) was an American dentist who first publicly demonstrated the use of inhaled ether as a surgical anaesthetic in 1846

1702. Who coined term anaesthesia ?

a) Morton

b) Holmes

c) Morgan

d) Priestly

Correct Answer - A

Ans. is 'a' i.e., Morton

Second gas effect and diffusion hypoxia

- In initial part of induction, diffusion gradient from alveoli to blood is high and larger quantity of anaesthetic is entering blood.
- If the inhaled *Concentration of anaesthetic is high (eg N₂O)*, Substantial loss of alveolar gas volume will occur and it creates negative intralveolar pressure that leads to removal of more gas from cylinder to alveoli --> Concentration effect.
- If another inhalation agent is (eg Halothane) is being given at the same time, it also will be delivered to lung from the cylinder (due to negative intraalveolar pressure) —> *Second gas effect*.
- *During recovery* reverse occurs - N₂O having low blood solubility, rapidly diffuses into alveoli and dilutes the alveolar air —> partial pressure of oxygen in alveoli is reduced.
- The resulting hypoxia is known as *diffusion hypoxia*.
- Diffusion hypoxia can be prevented by continuing 100% O₂ inhalation for a few minutes after discontinuing N₂O, instead of straight away switching over to air.

Remember

- Concentration effect and secondary gas effect during induction.
- Diffusion hypoxia —> during recovering.

- All these occur with N_2O only

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1703. The following increases Intra Ocular pressure:

a) Thiopentone

b) Althesin

c) Ketamine

d) Barbiturate

Correct Answer - C
Ketamine

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1704. Circuit of choice for controlled ventilation ?

a) Magill circuit

b) Type C

c) Type D

d) Type E

Correct Answer - C
Ans. is 'c' i.e., Type D

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1705. Capnography helps to know the following

- a) Correct intubation
- b) Pulmonary embolism
- c) Adequate ventilation
- d) Lung perfusion
- e) Significant metabolic change

Correct Answer - A:B:C:D:E

Answer- A,Correct intubation B,Pulmonary embolism C,Adequate ventilation D,Lung perfusion E,Significant metabolic change

- Conditions that affect ET CO₂
- Increased
- Hypoventilation
- Rebreathing
- Malignant hyperthermia,
- Neuroleptic malignant syndrome
- Increased skeletal muscle activity (shivering
- Hypermetabolism
- Hyperthyroidism & thyroid storm
- Decreased
- Hyperventilation
- Pulmonary embolism
- Hypoperfusion, hypotension, hypovolemia, shock
- Hypothermia

1706. Supreme LMA characteristic is

- a) Has no bite block
- b) Used in infants
- c) High pressure, low volume
- d) Has built in drain tube

Correct Answer - D

Ans. is 'd' i.e., Has built in drain tube

- LMA supreme is one of the most advanced laryngeal mask airway (LMA).
- It has features of usual LMA with additional *Built-in drain tube and a bite block*.
- It has *high volume/low pressure* cuff which generates higher seal pressure. o It also provides a conduit for active suctioning of stomach.
- It can be used in infants as well as in adults.

1707. Critical temperature of oxygen is?

a) 20

b) 118

c) 36.5

d) 400C

Correct Answer - B
Ans. is 'b' i.e., -118

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1708. Critical temperature for liquid nitrogen is ?

a) 36.5°C

b) -20°C

c) -147°C

d) -242°C

Correct Answer - C

Ans. is 'c' i.e., -147°C

- Critical temperature (T_c) of a substance is the temperature at and above which vapour of that substance can not be liquified, no matter how much pressure is applied (Note: Below critical temperature a substance can exist as a liquid or gas depending on pressure).
- Critical temperature of N_2 is -146.9°C ; that means N_2 can be liquified below -146.9°C $\rightarrow$ So, liquid nitrogen must be stored below -146.9°C .

1709. Which anaesthetic belongs to ester group?

a) Procaine

b) Times New Roman

c) Lignocaine

d) Propofol

Correct Answer - A

Ans. is 'a' i.e., Procaine

- **Esters (aminoesters) :-** Procaine, chlorprocaine, tetracaine (amethocaine), Benzocaine, Cocaine.
- **Amides (aminoamides)** Lignocaine, Mepivacaine, Prilocaine, Bupivacaine, Etidocaine, Ropivacaine , Dibucaine.

1710. In ophthalmology a patient is allergic to aminoesters. What can be used?

a) Cocaine

b) Procaine

c) Prilocaine

d) Bupivacaine

e) Tetracaine

Correct Answer - C:D

Ans. is 'c' i.e., Prilocaine & 'd' i.e., Bupivacaine

[Ref: Lee's 13th/e p. 486]

- Prilocaine & bupivacaine are amides (amcinonide). Other three are aminoesters.

1711. In pseudocholinesterase deficiency, drug to be used cautiously is-

- a) Barbiturate
- b) Succinylcholine
- c) Halothane
- d) Gallamine

Correct Answer - B

Ans. is 'b' i.e., Succinylcholine

Cholinesterase

At cholinergic nerve endings, in erythrocytes, and gray matter there is an enzyme that specifically destroys acetylcholine, true cholinesterase or acetylcholinestrane.

In various tissues, especially in plasma, liver, white matter & intestine, there are other esterases which are not specific for acetylcholine but which also destroy other esters, these are called nonspecific or pseudocholinesterase or butyrylcholinesterase.

The drugs hydrolyzed by pseudocholinesterase are (Miller 5th/e p. 419, 420)

- 1. Succinylcholine
- 2. Cocaine
- 3. Mivacurium
- 4. Bambuterol
- 5. Remifentanyl
- 6. Procaine

Pseudocholinesterase is more sensitive to organophosphate anticholinesterase, while true acetylcholinesterase is more sensitive to carbamate anticholinesterase (Physostigmine).

Conditions where pseudocholinesterase level decreases.

- 1. *Pregnancy*
- 2. Malnutrition
- 3. CRF
- 4. Burns
- 5. Collagen vascular disease
- 6. Hypothyroidism
- 7. Malignancy
- 8. Liver failure

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1712. A 6 year old boy taken for ophthalmic examination under anaesthesia. His father told that he has lower limb weakness & his elder brother died at 14 years of age. Which anaesthetic drug has to be avoided-

a) Succinylcholine

b) Pancuronium

c) Atracurium

d) Dexacurium

Correct Answer - A

Ans. is 'a' i.e., Succinylcholine

Succinylcholine

- SCh is a depolarising skeletal muscle relaxant.
- It causes sustained partial depolarization of muscle end plate → *initially produce twitching and fasciculation* followed by flaccid paralysis.
- *It is the shortest and fastest acting skeletal muscle relaxant.*
- *It is the only muscle relaxant which stimulate autonomic ganglia and vagus.*
- *SCh is the most commonly used muscle relaxant for passing endotracheal tube (mivacurium and rocuronium are alternatives).*
- *SCh is rapidly hydrolysed by plasma cholinesterase, some patients have genetically determined abnormality or deficiency of pseudocholinesterase, in them, SCh causes phase II block.*
- It can cause *muscle fasciculations* and soreness, change in BP and

- HR, arrhythmia, histamine release and IC efflux from muscles.
- *Dangerous hyperkalemia can occur in patients with burn, crush injury, muscular dystrophy, GB. Syndrome, paraplegia or hemiplegia, myasthenia gravis and rhabdomyolysis contraindicated in such patients.* o It can accentuate malignant hyperthermia caused by halothane.
- SCh causes increase in all pressures → intraocular, intracranial, BP, and intrabdominal → contraindicated in glaucoma, head injury.

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1713. Blood : Gas partition coefficient is a measure of ?

- a) Potency of anaesthetic agent
- b) Speed of induction and recovery
- c) Lipid solubility of agent
- d) None

Correct Answer - B

Ans. is 'b' i.e., Speed of induction and recovery

- Minimum alveolar concentration (MAC) → Measure of potency.
- Blood : Gas partition coefficient Blood solubility of anaesthetic agent and determines the speed of induction & recovery.
- Oil : Gas *partition coefficient* -4 Lipid solubility of anaesthetic agent and is related to potency of anaesthetic agent.

1714. Least MAC is of which inhalational agent?

a) Xenon

b) Halothane

c) Sevoflurane

d) Isoflurane

Correct Answer - A
Ans. is 'a' i.e., Xenon

Agent	MAC (%)

Ether	1.9
Halothane	0.75
Enflurane	1.68
Isoflurane	1.2
Desflurane	6.0
Sevoflurane	2.0
Nitrous oxide	105

"Xenon has MAC of 71%" — Morgan

Methoxyflurone (MAC = 0.16%) > Trilene (0.2%) > Halothane (0.74%) > Chloroform (0.8%) > Isoflurane (1.15%) > Entlurane (1.68%) > Ether (1.92%) > Sevoflurane (2.0%) > Desflurane (6,0%) > Cyclopropane (9.2%) > N2O (104%).

1715. Fastest induction and recovery is seen with ?

a) Desflurane

b) N₂O

c) Halothane

d) Enflurane

Correct Answer - A

Ans. is 'a' i.e., Desflurane

- *decreasing order* (Increasing order of B : G partition coefficient and blood solubility) : -

Desflurane (0.42)^Q > Cyclopropane (0.44) > N₂O (0.47) >

Sevoflurane (0.69)^Q > Isoflurane (1.38) >

Enflurane (1.8) > Halothane (2.4) > Chloroform (8) > Trilene (9) >

Ether (12) > Methoxyflurane (15)^Q.

1716. All are false about N₂O except?

- a) Least potent
- b) Good muscle relaxant
- c) Lighter than air
- d) No diffusion hypoxia

Correct Answer - A

Ans. is 'a' i.e., Least potent

Nitrous oxide N₂O

- It is colourless, odourless, *heavier than air*, nonirritating and noninflammable gas. o It is also called *laughing gas*.
- MAC is 105% (least potent) - even pure N₂O at 1 atmospheric pressure can not produce adequate anaesthesia. o *It has good analgesic but poor muscle relaxant activity*.
- It is supplied under pressure in *blue coloured* steel cylinders.
- It has very low blood solubility → induction is quick and smooth with rapid recovery.
- Second gas effect and diffusion hypoxia occur with N₂O only.
- N₂O is generally used as a *carrier and adjuvant* to other anaesthetics → A mixture of 70% N₂O + 25 - 30% O₂ + 0.2 - 2% another potent anaesthetic is employed for most of the surgical procedures.
- Entonox is a mixture of 50% N₂O and 50% O₂.
- It has little effect on respiration, heart and BP.
- *It can cause bone marrow depression and vit B₁₂ deficiency*.
- N₂O is the only anaesthetic reported to produce hematologic toxicity and neurotoxicity with long term administration.
- *Both toxicities are the result of the interaction of N₂O with vit B₁₂*.

- Complete bone marrow failure can be expected after several days of continuous exposure.
- *Bone marrow changes are preventable by pretreating patients with large doses of folinic acid.*
- Other manifestations of vit B 12 deficiency eg. megaloblastic anemia, subacute combined degeneration of cord may also occur.
- Methemoglobinemia and laryngospasm may occur.
- It is contraindicated in patients with air cavities like pneumothorax, pneumoperitoneum and volvulus → expansion and increase in pressure occur.

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1717. Hepatotoxic inhalational agent ?

a) Halothane

b) Enflurane

c) Desflurane

d) Sevoflurane

Correct Answer - A

Ans. is 'a' i.e., Halothane

- All inhalational agent cause mild hepatotoxicity by decreasing hepatic blood flow.
- Isoflurane is the agent of choice in liver disease as it has least effect on Hepatic blood flow.
- Direct hepatotoxicity (Hepatitis, Hepatic necrosis) is caused by :- Halothane, Chloroform, trilene, methoxyflurane

1718. A patient after giving inhalational anaesthesia developed fulminant hepatitis, patient was exposed to same drug previously. Which is the drug?

a) Halothane

b) N₂O

c) Enflurane

d) Isoflurane

Correct Answer - A

Ans. is 'a' i.e., Halothane

Halothane

- It is a volatile liquid with sweet odour, nonirritating and noninflammable.
- It is a potent anaesthetic with poor analgesic and muscle relaxant properties.
- Halothane causes direct depression of myocardial contractility by reducing intracellular Ca^{+2} .
- It causes fall in BP and CO.
- Heart rate decreases due to vagal stimulation.
- It tends to sensitize the heart to arrhythmogenic action of adrenaline —* contraindicated in pheochromocytoma.
- It causes greater depression of respiration and ventilation perfusion mismatch.
- It dilates the bronchi —> inhalation agent of choice in asthmatics (intravenous anaesthetic of choice in asthmatics is ketamine).
- It is a hepatotoxic drug and can also cause malignant hyperthermia (Succinylcholine accentuate it).

- Recovery is smooth and reasonably quick.
- It causes postanaesthetic shivering and chills.
- It inhibits intestinal and uterine contractions —> agent of choice for assisting external or internal version during late pregnancy.
- Because its uterine relaxant action it is contraindicated during labour.
- It is particularly suitable for induction and maintenance in children and as maintenance anaesthetic in adults.

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1719. Inhalational agent of choice for neurosurgery ?

a) Halothane

b) Enflurane

c) Isoflurane

d) N2O

Correct Answer - C

Ans. is 'c' i.e., Isoflurane

Anaesthetic agents of choice for various conditions Day care :

Ischemic heart
disease :

Congenital heart disease	Propofol Etomidate

Left to right shunt :	Isoflurane

Right to left shunt :	Ketamine

CHF :	Ketamine

Shock	Ketamine

To produce deliberate hypotension	Isoflurane Thiopentone

Epilepsy :	Methohexitone

For electroconvulsive therapy :	Thiopentone Isoflurane

Thyrotoxicosis :	Isoflurane

Cardiac surgery :

Neurosurgery :

1720. Which of the following is safe even if injected intraarterial?

a) Thiopentone

b) Propofol

c) Midazolam

d) Methohexitone

Correct Answer - B

Ans. is 'b' i.e., Propofol

- Accidental extravasation or intra-arterial injection of propofol does not cause adverse reactions"
- Primer of Anaesthesia "Intraarterial injection of propofol does not cause vascular injury" – Essentials of Anaesthesia
- Etomidate is also safe. –Miller's

Drugs associated with severe complications after intraarterial injection

1. Benzodiazepines : Diazepam, midazolam, temazepam, chlordiazapoxide
2. Phenothiazines : Promethazine, chlorpromazine, promazine
3. Barbiturates : Thiopentone, methexitone, secobarbitone, pentobarbitone
4. Amphetamines
5. Antibiotics : Flucloxacillin, Penicillin
6. Narcotics : Heroin, mepridine, propoxyphene, cocaine
7. Q Miscellaneous : Tubocurarine, atracurium

1721. Maximum global warming is by?

a) Desflurane

b) Isoflurane

c) Sevoflurane

d) Halothane

Correct Answer - A

Ans. is 'a' i.e., Desflurane

- Desflurane is a greenhouse gas.
- It causes maximum global warming.

Global warming potential (as an equal amount of O₂)

Isoflurane 210 times

Sevoflurane 510 times

Desflurane 1620 times

1722. Which anaesthetic drug contributes to green house effect?

a) Enflurane

b) Desflurane

c) Sevoflurane

d) Halothane

Correct Answer - B
Ans. is 'b' i.e., Desflurane

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1723. Regarding propofol, which one of the following is false?

- a) It is used as an intravenous induction agent
- b) It causes severe vomiting
- c) It is painful on injecting intravenously
- d) It has no muscle relaxant property

Correct Answer - B

Ans. is 'b' i.e., It causes severe vomiting

Propofol

- Propofol is a milky white powder that is preservative free; therefore, it must be used within 6 hours. It is an oil based preparation, therefore injection is painful.
- Propofol is the most frequently used intravenous anaesthetic today. —Miller 6thie - 318
- It can be used for both induction as well as maintenance.
- It does not possess anticonvulsive action (unlike thiopentone).
- It causes fall in BP and bradycardia.
- Like thiopental it does not possess muscle relaxant action.
- Propofol possess significant antiemetic and antipruritic action. → Miller 6th/e - 324
- Propofol decreases polymorphonuclear leukocyte chemotaxis but not adherence, phagocytosis and killing (Thiopentone blocks all these) —) increased life threatening infections.
- Propofol is particularly suitable for outpatient surgery.
- Intermittent injection or continuous infusion of propofol is frequently used for total Lv. anaesthesia (TINA) when supplemented by fentanyl.

- It is anaesthetics of choice for intubation in ICU and for patients with malignant hyperthermia.
- Side effects - pain on injection, myoclonus, apnea, L BP and rarely thrombophlebitis.
- Propofol infusion syndrome
 - 1. A lethal syndrome, associated with infusion of propofol for 48 hours or longer.
 - 2. Occurs in children and critically ill.
 - 3. It occurs as a result of failure of free fatty acid metabolism and failure of the mitochondrial respiratory chain.
 - 4. Features are - cardiomyopathy with acute cardiac failure, metabolic acidosis, skeletal myopathy, hyperkalemia, hepatomegaly and lipemia

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1724. Dissociative anaesthesia is produced by -

a) Ketamine

b) Etomidate

c) Propofol

d) Thiopentone

Correct Answer - A

Ans. is 'a' i.e., Ketamine

- *Dissociative anaesthesia is characterized by profound analgesia, immobility, amnesia with light sleep and feeling of dissociation from one's own body and the surroundings. Cataleptic state.*
 - o Ketamine (phencyclidine) induces dissociative anaesthesia.

1725. Inducing agent of choice in shock ?

a) Isoflurane

b) Desflurane

c) Ketamine

d) Thiopentone

Correct Answer - C

Ans. is 'c' i.e., Ketamine

- Inducing agent of choice in Asthma & COPD → Ketamine.
- Inhalational agent of choice in Asthma & COPD → Halothane.

1726. Which of the following anesthetic agents have analgesic property:

a) Ketamine

b) Nitrous oxide

c) Thiopentone

d) a and b

Correct Answer - D

A i.e. Ketamine; B i.e. Nitrous oxide

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1727. Intraocular pressure is increased by which anaesthetic?

a) Ketamine

b) Propofol

c) N₂O

d) Isoflurane

Correct Answer - A
Ans. is 'a' i.e., Ketamine

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1728. Disadvantage of ketamine is?

a) Increased heart rate

b) Increased ICT

c) Delirium

d) All of the above

Correct Answer - D

Ans. is 'd' i.e., All of the above

- When administered to adult patients as a sole anaesthetic agent, ketamine frequently cause *emergence reaction* characterized by anxiety, hallucination, delirium. Moreover, ketamine shows cardiovascular stimulant property (increases heart rate and BP), increases salivary and bronchial secretions, and may increase intracranial, intraocular and pulmonary pressure. All of these features have been advocated as limitations for its usefulness.

1729. Which anaesthetic is contraindicated in renal failure?

a) Isoflurane

b) Desflurane

c) Halothane

d) Methoxyflurane

Correct Answer - D

Ans. is 'd' i.e., Methoxyflurane

Methoxyflurane

- It was most potent inhalation agent (least MAC), but not used now (now Halothane is most potent). o It should not be used in closed circuit (reacts with rubber tubing of the closed circuit).
- It has slowest onset & recovery (however now ether has slowest onset & recovery as methoxyflurane is not used). o Boiling point is more than water (104°C).
- *Intrarenal metabolism of methoxyflurane and subsequent intrarenal production of fluoride ion is the significant cause of methoxyflurane renal toxicity.*
- It can cause high output renal failure and hepatotoxicity

1730. During rapid induction of anesthesia ?

- a) Sellick's maneuver is not required
- b) Pre-oxygenation is mandatory
- c) Suxamethonium is contraindicated
- d) Patient is mechanically ventilated before endotracheal intubation

Correct Answer - B

Ans. is 'b' i.e., Pre-oxygenation is mandatory

- During rapid sequence induction preoxygenation is done for full 3 minutes. Sch is the muscle relaxant of choice for intubation. Sallieck's maneuver is done to prevent aspiration. Manual ventilation before intubation is avoided as this inflates the stomach and encourages regurgitation & aspiration.

Rapid sequence anaesthesia

- When anaesthesia is given for emergency surgery, it is called a "rapid sequence anaesthesia". The patients have full stomach because there is no starvation for anaesthesia (it is an emergency surgery) and gastric emptying is delayed due to trauma, acute abdomen. Therefore, the objective of rapid sequence anaesthesia is to secure the airway rapidly and prevent aspiration of gastric contents.
- Procedure of rapid sequence has following steps : -
- Li The patient is preoxygenated for full 3 minutes.
- Intravenous induction agent (thiopentone or propofol) is given.
- Sellick's maneuver (cricoid/pressure) is done to prevent aspiration.
- After ensuring the correct position of tube cricoid pressure is released and maintenance anaesthesia (NCO 66%, O₂% 33%, & inhalational agent) is given. A non-depolarizing blocker is now

added.

- Suxamethenium (succinylcholine) is given as it quickly relaxes the laryngeal muscles so that rapid intubation can be done.
- Not done during rapid sequence anaesthesia : ?
- .. Manual ventilation before intubation is avoided as this inflates the stomach and encourages regurgitation & aspiration.
- ?. Premedications are not given.

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1731. Drug used for emergency intubation is ?

a) Propofol

b) Ketamine

c) Eomidate

d) None

Correct Answer - A

Ans. is 'a' i.e., Propofol

- Emergency intubation in anaesthesia refers to rapid sequence anaesthesia (or rapid sequence intubation).
- Any inducing agent can be used, but thiopental and propofol are the preferred agent.

1732. In pediatric epidural anaesthesia, volume of local anaesthetic given to cause sacral dermatome block is?

a) 0.5 -1 ml/kg

b) 2 - 4 ml/kg

c) 5 - 10 ml/kg

d) None

Correct Answer - A

Ans. is 'a' i.e., 0.5 - 1 ml/kg

- Two most commonly used local anaesthetics for caudal block in children are :-

1. *Bupivacaine* → 0.25% concentration in dose of 1 ml/kg.

2. *Ropivacaine* → 0.2% concentration in dose of 1.2 ml/kg.

- For easy calculation of volume :-

1. 0.5 ml/kg for sacral blockade.

2. 0.75 ml/kg for lower thoracic blockade.

3. 1.25 ml/kg for upper thoracic blockade.

1733. Shortest acting local anaesthetics ?

a) Lignocaine

b) Bupivacaine

c) Etidocaine

d) Chlorprocaine

Correct Answer - D

Ans. is 'd' i.e., Chlorprocaine

Short duration Low potency	Intermediate duration (30-90 min) Intermediate potency	Long duration (> 120 min) High potency
Chlorprocaine (shortest acting) Procaine	Lignocaine Mepivacaine Prilocaine Cocaine	Bupivacaine Tetracaine Etidocaine Ropivacaine Dibucaine (longest acting)

1734. All are used for local infiltration except ?

a) Lidocaine

b) Ropivacaine

c) Dibucaine

d) Bupivacaine

Correct Answer - C
Ans. is 'c' i.e., Dibucaine

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1735. Eutectic mixture of local anaesthetic (EMLA) cream is

- a) Bupivacaine 2.0% + Prilocaine 2.5%
- b) Lidocaine 2.5% + Prilocaine 2.5%
- c) Lidocaine 2.5% + Prilocaine 5%
- d) Bupivacaine 0.5% + Lidocaine 2.5%

Correct Answer - B

Ans. is 'b' i.e., Lidocaine 2.5% + Prilocaine 2.5%

Eutectic mixture of local anaesthetic (EMLA)

- This is unique topical preparation which can anaesthetise intact skin.
- It is a mixture of 2.5% lidocaine and 2.5% prilocaine.
- It acts slowly and the cream must be held in contact with skin for at least 1 hour.
- EMLA is used : to make venepuncture painless especially in children, and for procedure like skin grafting & circumcision.
- As systemic absorption of prilocaine can cause methemoglobinemia, EMLA should not be used on mucocutaneous membrane or in very small child.

1736. Local anaesthesia causing methemoglobinemia ?

a) Procaine

b) Prilocaine

c) Etodocaine

d) Ropivacaine

Correct Answer - B

Ans. is 'b' i.e., Prilocaine

Prilocaine and benzocaine can cause methemoglobinemia.

Important facts

- Chlorprocaine is the shortest acting LA.
- Dibucaine is the longest acting, most potent and most toxic LA.
- Bupivacaine is the most cardiotoxic LA (Ropivacaine is a newer bupivacaine congener with less cardiotoxicity). o Levobupivacaine (The S (-) enantiomer of bupivacaine) is less cardiotoxic and less prone to cause seizure. o Prilocaine can cause Met haemoglobinemia.
- Lignocaine is the most commonly used LA.
- Bupivacaine has the highest local tissue irritancy.
- Chlorprocaine is contraindicated in spinal anaesthesia as it can cause paraplegia due to presence of neurotoxic preservative sodium metabisulphite.
- Procaine is the LA of choice in malignant hyperthermia

1737. Not a sign of stellate ganglion block?

- a) Miosis
- b) Exophthalmos
- c) Nasal congestion
- d) Conjunctival redness

Correct Answer - B

Ans. is 'b' i.e., Exophthalmos

- There is enophthalmos (not exophthalmos)
- **Stellate ganglion block**
- Stellate ganglion is formed by fusion of lower cervical and first thoracic ganglion. It is blocked anterior to the tubercle of transverse process of C₆ vertebra i.e., Chassaignac tubercle at the level of cricoid cartilage.
- Signs of successful block are : - Horner syndrome (miosis, ptosis, anhydrosis, enophthalmos, absence of ciliospinal reflex), flushing of face, conjunctival congestion, Nasal stuffiness (Gutman's sign), Injection of tympanic membrane (*Muller's syndrome*), Increased skin temperature and lacrimation.
- Stellate ganglion block is indicated in : -
 1. Treatment of *acute herpes zoster* in the distribution of the trigeminal nerve, cervical and upper thoracic dermatomes.
 2. Acute vascular insufficiency of upper limb and face.
 3. Frost bite
 4. Reflex sympathetic dystrophy of face, neck and upper extremities.
 5. Raynaud's syndrome of upper extremities.

1738. Most commonly used approach of brachial plexus block?

a) Interscalene

b) Supraclavicular

c) Infraclavicular

d) Axillary

Correct Answer - B

Ans. is 'B' i.e., Supraclavicular

Brachial plexus block

- This is the second most commonly practised block after central neuraxial block (spinal & epidural anaesthesia). Brachial plexus block is used for upper limb surgeries.
- Brachial plexus can be blocked by 4 approaches : -
 - 1. Interscalene approach**
- Brachial plexus is blocked between anterior and middle scalene. This approach is not used routinely due to close proximity of vital structures. Ulnar nerve is usually spared by this approach because injection is given in close proximity of upper nerve roots and inferior nerve roots (C8-T 1) may be spared.
- This technique provides excellent anaesthesia and analgesia for shoulder and upper arm procedures. (in contrast to other three approaches which do not provide adequate shoulder anaesthesia).
- Complications include Horner syndrome (due to stellate ganglion block), phrenic nerve block, intravascular injection into carotids and epidural or intrathecal injections.
- 2. Supraclavicular approach**
- This is the most commonly used approach. It involves the injection of local anaesthetic in close proximity to

- the trunks of the brachial plexus by inserting the needle lateral to subclavian vessels. The supraclavicular
- block is performed where the brachial plexus is most compact, consequently, it produces reliable and rapid
- onset anaesthesia and is particularly useful in a fast paced ambulatory surgery centre.
- Pneumothorax is the most common complication. Other complications include phrenic nerve block, intravascular injection in subclavian artery or vein, Horner syndrome, hematoma formation.

3. Infra-clavicular approach

- Infraclavicular block involves the injection of local anaesthetic in close proximity of cords of the brachial plexus. The axillary nerve may be spared as this nerve exits the brachial plexus sheath proximal to the level of infraclavicular block.

4. Axillary approach

- Axillary block involves the injection of local anaesthetic in close proximity of terminal branches of the
- brachial plexus. The major disadvantage of this approach is that mucocutaneous and intercostobrachial nerves are spared. So arm surgery cannot be performed. In contrast to interscalene approach, most intense
- block occur in (C7-T1) ulnar dermatomes and least in C5-C6 dermatomes.

1739. High spinal anaesthesia is associated with?

a) Decreased BP & decreased heart rate

b) Increased BP & decreased heart rate

c) Decreased BP & increased heart rate

d) Increased BP & increased heart rate

Correct Answer - A

Ans. is 'a' i.e., Decreased BP & decreased heart rate

- Spinal anesthesia ascending into the cervical levels (high spinal anesthesia) causes severe hypotension, bradycardia and respiratory insufficiency. Complications of spinal anaesthesia

Intraoperative

Postoperative

Headache

(post dural

puncture

headach) -

most

common

Hypotension

Cranial nerve

(most common)

palsies (any

Bradycardia 10th

cranial nerve

Respiratory depression except the

Cardiac arrest

1st, 9th & most

Hypothermia in elderly commonly 6th

nerve is

involved)

Cauda

equina

syndrome
Arachnoiditis

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1740. Smooth induction is seen by -

a) Ether

b) Halothane

c) Isoflurane

d) Enflurane

Correct Answer - C

Ans. is 'c' i.e., Isoflurane

Induction by inhalation agents

Unpleasant

Ether

Intermediate

Halothane

Enflurane

Smooth

Isoflurane

Desflurane

Sevoflurane

Nitrous oxide

1741. Best local anaesthetic for ophthalmic surgery is

a) Tetracaine

b) Prilocaine

c) Procaine

d) Bupivacaine

Correct Answer - D

Ans. is 'd' i.e., Bupivacaine

- The choice of local anaesthetic for ocular surgery varies.
- But lidocaine (2%) and bupivacaine (0.5-0.75%) are used most commonly.
- Generally the use of 1:1 mixture of 2% lidocaine (xylocaine) and 0.50% bupivacaine along with adrenaline and hyaluronidase in facial, retrobulbar and peribulbar blocks is common.

1742. Percentage of adrenaline with lignocaine for local infiltration is?

a) 1:1000

b) 1:10000

c) 1:100

d) 1:50000

Correct Answer - D

Ans. is 'd' i.e., 1:50000

- The most common concentrations of epinephrine combined with local anaesthetics are 1:50,000 (0.02 mg/ml), 1:100,000 (0.01 mg/ml) and 1:200,000 (0.005 mg/ml).
- The 1:50000 concentration is manufactured in combination with 2% lidocaine.
- The 1:100,000 concentration is manufactured in combination with 2% lidocaine and 4% articaine.
- The 1:200,000 concentration is manufactured in combination with 4% prilocaine, 4% articaine and 0.5% bupivacaine

1743. Drug of choice in lignocaine toxicity -

a) Bretylium

b) Amiodarone

c) Isoprenaline

d) Diazepam

Correct Answer - D

Ans. is 'd' i.e., Diazepam

- If lignocaine toxicity is suspected, stop the injection immediately.
- Ensure adequate oxygenation, whether by face mask or by intubation.
- Anticonvulsants such as benzodiazepines and barbiturates are the drug of choice for seizure control. • Succinylcholine is sometimes also used to terminate the neuromuscular effects of seizures.
- If CVS symptoms occur (cardiac depression and hypotension), IV fluid and vasopressor agents may be required.
- If metabolic acidosis develops, use of sodium bicarbonate can be considered, although, as in other instances of acute metabolic acidosis, this is controversial.

1744. Drug of choice for Bier's block ?

a) Bupivacaine

b) Etidocaine

c) Ropivacaine

d) Lidocaine

Correct Answer - D

Ans. is 'd' i.e., Lidocaine

Intravenous regional Anaesthesia (Bier's block)

- Intravenous regional anaesthesia (IVRA) is used most often for surgery of the forearm and hand, but can also be used for distal leg and foot.
- First IV canula is inserted usually in the dorsum of hand.
- Then tourniquet cuff is applied to proximal arm.
- Limb is elevated and exsanguinated with the help of an elastic bandage (Esmarch).
- Now tourniquet cuff is inflated above systolic pressure (so that no blood can enter in that limb and the limb remains exsanguinated).
- Now the local anaesthetic solution is slowly injected into cannula.
- The veins are filled with only local anaesthetic as there is no blood → local anaesthetic can not be drained out from upper limb and can not enter in systemic circulation because of inflated cuff in proximal arm.
- The arm is anaesthetized in 6-8 minutes.
- Lidocaine without adrenaline is the DOC for this technique. —Goodman & Gilman 11th ed 381 o A few clinician prefers prilocaine over lidocaine because of its higher therapeutic index - least toxic LA.
- Tourniquet cuff deflation, premature release or failure of tourniquet can

- cause release of LA into circulation and toxicity may occur → So, cardiotoxic LAs like bupivacaine and etidocaine are contraindicated for Bier's block.

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1745. Conscious sedation is ?

- a) CNS depression with unconsciousness
- b) Sedation with inability to respond to command
- c) Sedation with ability to respond to command
- d) Any of the above

Correct Answer - C

Ans. is 'c' i.e., Sedation with ability to respond to command

- Conscious sedation is a technique in which drugs are used to produce a state of CNS depression (but not unconsciousness), enabling surgical procedure to be carried out while maintaining communication with the patient
- who is able to respond purposefully to commands and maintain a patent airway throughout.
- The protective airway reflexes are not lost, therefore conscious sedation is safer.
- However, by itself, it is not able to suppress pain of dental procedures; local anaesthetic must be injected in addition.
- Drugs used for conscious sedation are -
 1. N₂O
 2. Diazepam or midazolam
 3. Propofol
 4. IM promethazine
 5. IV fentanyl

1746. True about conscious sedation are all except ?

- a) CNS depression
- b) Patient is conscious
- c) Protective reflexes are abolished
- d) Patient can obey commands

Correct Answer - C

Ans. is 'c' i.e., Protective reflexes are abolished

- conscious sedation, protective reflexes are intact (has been explained in previous sessions).

1747. The latest AHA 2010 for CPR in basic life support by two individuals for cardiac external massage & ventilation in adult is?

a) 30-2

b) 15-1

c) 15-2

d) 30-1

Correct Answer - A
Ans. is 'a' i.e., 30-2

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1748. Doppler effect results from change in -

a) Amplitude of sound

b) Frequency of sound

c) Direction of sound

d) None of the above

Correct Answer - B

Answer- B. Frequency of sound

The Doppler effect results from an apparent shift in sound frequency as sound wave are reflected from moving targets, usually blood cells.

If motion is toward the transducer, the frequency of returning echo is higher that of the transmitted sound.

1749. X-ray Artifact is -

- a) A radiolucent area
- b) Any abnormal opacity in the radiograph
- c) Produced when patient moves while taking the shoot
- d) All the above

Correct Answer - C

Answer- C. Produced when patient moves while taking the shoot

Artifacts can present in a variety of ways including abnormal shadow noted on a radiograph or degraded image quality and have been produced by artificial means from hardware failure, operator error and software (post-processing) artifacts.

Common causes :-

- Improper handling of the films
- Errors while processing the films
- Patient movement while taking the shoot

1750. Frequency of ultrasound waves in USG

-

a) 2000 Hz

b) 5000 Hz

c) < 2 MHz

d) >2 MHz

Correct Answer - D

Answer- D. >2 MHz

The ultrasound machine emits high-frequency sound waves, ranging from 2-15 MHz. Whose frequencies are considerably above the upper limit of human ear's audible range, i.e., greater than 20000 Hz. Speed of these sound waves in the body is 1540 m/s (in comparison to air, where velocity of sound wave is 330m/s).

1751. Gyromagnetic property of proton is seen in -

a) MRI

b) CT

c) PET scan

d) USG

Correct Answer - A

Answer- A. MRI

Ultrasonography is based on piezoelectric effect.

MRI is based on gyromagnetic property of proton.

1752. Enhancement in CT contrast is due to -

a) Iodine

b) Gadolinium

c) Silver

d) Mercury

Correct Answer - A

Answer- A. Iodine

Iodinated contrasts are the most commonly used radiocontrast media in radiography and CT.

Gadolinium is the most commonly used MR contrast agent.

1753. Which delivers highest dose of radiation -

a) Cardiac perfusion scan

b) CT chest

c) CT brain

d) Mammogram

Correct Answer - A

Answer- A. Cardiac perfusion scan

Medical diagnostic imaging is a major source of radiation exposure to clinicians and the patients. Following table depicts the radiation exposure through the routine medical imaging.

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1754. Best view for collapse of middle lobe lung is -

a) Lateral

b) AP

c) Oblique

d) Lordotic

Correct Answer - D

Answer- D. Lordotic

The lordotic view is also useful for recognizing collapse of lingula or middle lobe when these areas become very thin and cast minimal shadow on the PA view.

1755. Double shadow behind right atrium and straightening of left main bronchus indicates -

- a) Right atrium enlargement
- b) Right ventricle enlargement
- c) Left atrium enlargement
- d) Left ventricle enlargement

Correct Answer - C

Answer- C. Left atrium enlargement

Left atrium enlargement

Ref Sutton 7h/e p. 280-350]

1756. Left atrial enlargement is seen in -

- a) Mitral stenosis
- b) Tricuspid regurgitation
- c) AR
- d) None

Correct Answer - A

Answer- A. Mitral stenosis

Due to left atrial enlargement :- Straightening of left heart border, elevation of left main bronchus with widening of carina, double atrial shadow (Double density sign), posterior displacement of esophagus on barium swallow, Prominent posterosuperior part of cardiac shadow.

1757. In patient with high clinical suspicion of pulmonary thromboembolism, best investigation would be?

- a) D-dimer
- b) CT angiography
- c) Catheter angiography
- d) Color Doppler

Correct Answer - B

B i.e. CT angiography

- Spiral or helical chest CT scan with intravenous contrast (CT pulmonary angiography) is the *principal imaging test for the diagnosis of pulmonary embolism*. It acquires image with $< 1\text{ mm}$ resolution and visualizes up to 6th order branches and small peripheral emboli with a resolution superior to conventional invasive contrast pulmonary angiography. It obtains excellent images of right & left ventricle and can be used for diagnosis as well as *risk stratification*. In patients with pulmonary embolism, *RV enlargement indicates 5 times more likelihood of death within next 30 days*.
- Inadequate breath holding can impair the image quality b/o change in arterial flow rates and motion artefact during breathing. The advent of multidetector CT (MDCT) allows examination of whole lung during single breath -hold. It is noninvasive.
- Ventilation - perfusion lung scanning is now *second line diagnostic test* for PE, and mostly used in patients who *cannot tolerate intravenous contrast*. Its utility is greatest when accompanied with a normal chest x-ray implying that a ventilation - perfusion mismatch is not due to parenchymal disease. High probability ($>80\%$) scan have

2 large segmental V-P mismatches (perfusion defects & normal ventilation) with a normal chest radiograph. And very low probability scans have microparticles (10 - 100 μ m) of Tc99 micro - aggregate albumin (MAA) in patients lying supine. Ventilation scintigraphy is performed by inhaling Krypton - 81, (best), Xenon 133, Tc99 - diethylenetriamine penta acetic acid (DTPA), or technegas. Last two can't be administered during perfusion scan as both are labelled with Tc99. *Eight images* (anterior, posterior, oblique & lateral on both sides) are acquired.

- Conventional pulmonary angiography: Non invasive CT with contrast have virtually replaced invasive pulmonary angiography as a diagnostic tool. However, it remains the *gold standard test*.

1758. Air bronchogram on chest Xray denotes

-

a) Intrapulmonary lesion

b) Extrapulmonary lesion

c) Intrathoracic lesion

d) Extrathoracic lesion

Correct Answer - A

Answer- A. Intrapulmonary lesion

Air in bronchi is visualized it is called air bronchogram. Air bronchogram indicates intrapulmonary pathology, It excludes any pleural or mediastinal pathology.

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1759. Calcified pulmonary metastasis is seen in which carcinoma -

a) Pancreatic carcinoma

b) Thyroid carcinoma

c) Endometrial carcinoma

d) None

Correct Answer - B

Answer- B. Thyroid carcinoma

Differential diagnosis of calcified pulmonary metastasis :-

1. Osteosarcoma
2. Colon carcinoma
3. Chondrosarcoma
4. Giant cell tumor of bone
5. Thyroid carcinoma
6. Ovarian cancer
7. Synovial sarcoma
8. Breast carcinoma

1760. Differential diagnosis of solitary pulmonary nodule are all except -

a) Bronchogenic carcinoma

b) Mycetoma

c) Tuberculoma

d) Hamartoma

Correct Answer - B

Answer- B. Mycetoma

Granulomas : - Tuberculoma (most common cause), Histoplasma, Coccidioidomycosis, cryptococcosis.

Other infections : - Organizing pneumonia, hydatid cyst.

Benign neoplasms : - Hamartoma, Fibroma, Neurofibroma, Carcinoid tumours, Lipoma, Bronchial adenoma

Malignant neoplasm : - Carcinoma bronchus, Alveolar cell carcinoma, metastasis (from breast, Sarcoma, Renal cell carcinoma, Seminoma), Pulmonary blastoma, Pulmonary sarcoma.

Inflammatory - Wegener's granulomatosis, rheumatoid arthritis, Sarcoidosis.

Congenital : - Sequestration, Bronchogenic cyst, AV malformation.

Miscellaneous : - Pulmonary infarct, Rounded atelectasis, Mucoid impaction.

1761. Most common feature of sarcoidosis on chest X-ray is:

March 2011, March 2013

- a) Pleural effusion
- b) Cavitation
- c) Bilateral hilar lymphadenopathy
- d) Pneumothorax

Correct Answer - C

Ans. C: Bilateral hilar lymphadenopathy

Sarcoidosis may be discovered unexpectedly on routine chest films as bilateral hilar lymphadenopathy

Sarcoidosis/Sarcoid/Besnier-Boeck disease/Besnier-Boeck-Schaumann disease

- It is a disease in which abnormal collections of chronic inflammatory cells (granulomas) form as nodules in multiple organs.
- The combination of erythema nodosum, bilateral hilar lymphadenopathy and arthralgia is called Lofgren syndrome.
- This syndrome has a relatively good prognosis
- Chest X-ray changes are divided into four stages
 1. Stage 1: Bihilar lymphadenopathy
 2. Stage 2: Bihilar lymphadenopathy and reticulonodular infiltrates
 3. Stage 3: Bilateral pulmonary infiltrates
 4. Stage 4: Fibrocystic sarcoidosis typically with upward hilar retraction, cystic and bullous changes

1762. Inferior rib notching is seen in

a) Coarctation of aorta

b) Rickets

c) ASD

d) Multiple myeloma

Correct Answer - A

A i.e. Coarctation of aorta

Inferior rib notching in coarctation of aorta is d/t pressure erosion of intercostal arteries It usually takes several years to develop, so is unusual before 10 years of age.

1763. Among the causes of rib notching are:

- a) Coarctation of aorta
- b) Congenital interruption of aorta
- c) Chronic superior venacava obstruction
- d) All of the above

Correct Answer - D
Ans. All of the above

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1764. The sign with patch of dullness beneath the angle of left scapula in a patient with pericardial effusion is named as -

a) Carvallo's sign

b) Ewart's sign

c) Homan's sign

d) Hoffmann's sign

Correct Answer - B

Answer- B. Ewart's sign

Heart sounds become faint -

- The apex impulse vanishes; but sometimes it remains palpable, medial to the left border of cardiac dullness.
- The base of the left lung may be compressed by pericardial fluid, producing Ewart's sign, a patch of dullness beneath the angle of the left scapula.
- The chest roentgenogram may show a "water bottle" or "flask shaped" configuration of the cardiac silhouette

1765. Water bottle heart is seen in -

a) PDA

b) Chronic emphysema

c) Pericardial effusion

d) Constrictive pericarditis

Correct Answer - C

Answer- C. Pericardial effusion

"Water-bottle" or flasked shaped or money bag heart - Pericardial effusion, hypothyroidism

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1766. Flask shaped heart is seen in following except:

a) Ebstein anomaly

b) Pericardial effusion

c) TOF

d) TAPVC

Correct Answer - D

D i.e. TAPVC

Due to dilation of SVC (superior vena cava) & left vertical vein, TAPVC (total anomalous pulmonary venous connection / return) of supra diaphragmatic variety shows *double contour*/ "Figger of 8"/ *Snowman configuration of cardiac silhouetteQ*.

1767. For pericardial calcifications, which is the best investigation -

a) MRI

b) Transesophageal echocardiography

c) USG

d) CT scan

Correct Answer - D

Answer- D. CT scan

CT is the best method for depiction of pericardial calcification, a finding suggestive of constrictive pericarditis in the appropriate clinical setting.

1768. DVT, investigation of choice is -

a) Doppler

b) Plethysmography

c) Venography

d) X-ray

Correct Answer - A

Answer is 'a' i.e. Doppler

- Doppler USG is the first investigation of choice for DVT.

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1769. Fluorescein angiography is used to examine -

- a) Ciliary vasculature
- b) Retinal vasculature
- c) Corneal vasculature
- d) Conjunctival vasculature

Correct Answer - B

Answer- B. Retinal vasculature

Fluorescein angiography is a radiological examination of retinal vasculature after the administration of a fluorescein dye.

1770. Barium swallow is used for -

a) Colon

b) Esophagus

c) Duodenum

d) Jejunum

Correct Answer - B

Answer- B. Esophagus

Barium swallow -Mainly for esophagus

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1771. The best investigative modality for gall bladder stones -

- a) Oral cholecystogram
- b) Percutaneous transhepatic cholangiography
- c) Ultrasound
- d) Intravenous cholangiogram

Correct Answer - C

Ans. is 'c' i.e. Ultrasound

- **Ultrasonography:** - This is the investigation of choice for the detection of gallstones, and obstructive jaundice. USG shows echogenic focus with posterior acoustic shadowing.
- The most specific sign of a contracted, stone-filled gallbladder is a hypoechoic wall superficial to a curvilinear echo from the stones and an acoustic shadow:- WES triad (Wall, Echo, Shadow) or the "Double arc shadow sign".
- IOC for diagnosis of gallstone- acute cholecystitis, acute acalculous cholecystitis, chronic cholecystitis is Ultrasound

1772. Pulled up cecum is seen in -

a) Ileocecal TB

b) Carcinoma cecum

c) Intussusception

d) Carcinoma

Correct Answer - A

Answer- A. Ileocecal TB

Conical cecum or Amputated cecum Cecum is shrunken in size and pulled out of the iliac fossa due fibrosis and contraction of mesocolon.

Stierlin sign :- Narrowing of terminal ileum with rapid emptying into a shortened, rigid or obliterated cecum.

String sign

1773. The study using barium for small intestine is known as -

a) Barium meal follow through

b) Barium swallow

c) Barium enema

d) None of the above

Correct Answer - A

Answer- A. Barium meal follow through

In most cases the jejunum and Ileum are examined following the barium examination of the upper gastrointestinal tract, referred to as the "barium meal and follow through" or simply "barium follow through".

1774. "String of beads" appearance on horizontal abdominal view X-ray is suggestive of:

a) Intussusception

b) Sigmoid volvulus

c) Small bowel obstruction

d) Large bowel obstruction

Correct Answer - C

Ans. Small bowel obstruction

String of beads sign is virtually diagnostic of small bowel obstruction

1775. Double bubble sign seen in :

a) Duodenal atresia

b) Duodenal stenosis

c) Volvulus

d) All

Correct Answer - D

Ans. is D

'a', 'b' & 'c' i.e. Duodenal atresia, Duodenal stenosis and Volvulus

- Double bubble sign is seen in *duodenal atresia*, duodenal web, duodenal stenosis, Ladd's band, Annular pancreas, Malrotation of gut, preduodenal vein.
- Distal gas is more often seen with midgut volvulus, duodenal stenosis and duodenal web

1776. Wireless capsule endoscopy is done to visualize which of the following condition?

a) Esophageal varices

b) Gastric carcinoma

c) Crohn's disease

d) Ulcerative colitis

Correct Answer - C

Crohn's disease

Wireless capsule endoscopy (WCE) allows direct visualization of the entire small-bowel mucosa. The diagnostic yield of detecting lesions suggestive of active CD is higher with WCE than CT enterography or small-bowel series. WCE cannot be used in the setting of a small-bowel stricture. Capsule retention occurs in <1 % of patients with suspected CD, but retention rates of 4-6% are seen in patients with established CD.

1777. Investigation with least radiation dose in the diagnosis Meckel's diverticulum is -

a) CT

b) MRI

c) Contrast radiography

d) Technetium -99m scanning

Correct Answer - C

Answer- C. Contrast radiography

It is a general rule that the ascending order of the radiation dose is MRI < X-ray < CT - Scan. Technetium - 99m has the radiation exposure more than X-ray but less than CT - Scan. So contrast radiography will have the minimum radiation exposure as it involves taking a radiograph after small bowel enema for diagnosis of meckel's diverticulum.

1778. Endoscopic USG criteria for chronic pancreatitis, when echogenic lesion is -

a) > 1 mm

b) 1.5 mm

c) > 2 mm

d) > 3 mm

Correct Answer - D

Answer- D. $\diamond$ > 3 mm

Parenchymal features

- Echo-poor lesion
- Echo-rich lesion (> 3 mm in diameter)
- Accenuation of lobular pattern
- Gland size, cyst

Ductal features

- Increased duct wall echogenicity
- Narrowing, dilatation
- Calculi

1779. Most sensitive test to detect early renal TB is -

a) Intravenous urography

b) CT

c) MRI

d) USG

Correct Answer - A

Answer- A. Intravenous urography

IVP remains the primary modality used to image the patients with renal, ureteric, and bladder tuberculosis. Early findings are best detected on IVP. It is the investigation of choice for urinary TB.

1780. Investigation of choice for focal neurologic deficit in emergency room is

-

a) CT

b) MRI

c) Lumbar puncture

d) CECT

Correct Answer - A

Answer- A. CT

In Indian set up CT Scan is the investigation of choice in the emergency room to screen patients of acute focal neurologic deficit.

1781. CT Scan finding in carotid cavernous sinus fistula is -

- a) Enlarged superior ophthalmic vein
- b) Enlarged inferior ophthalmic vein
- c) Enlarged superior ophthalmic artery
- d) Enlarged inferior ophthalmic artery

Correct Answer - A

Answer- A. Enlarged superior ophthalmic vein

Contrast-enhanced CT scan and MRI will demonstrate a dilated superior ophthalmic vein and cavernous sinus.

Ultrasonography may also demonstrate superior ophthalmic vein engorgement.

Magnetic resonance angiography (MRA) is also very useful in identifying fistulas as well as particular vessel involvement.

1782. On imaging diffuse axonal injury is characterized by -

- a) Multiple small petechial hemorrhage
- b) Patch ill defined low density lesion mixed with small hyperdens of petechial hemorrhage
- c) Crescentic extra-axial hematoma
- d) White matter lucencies

Correct Answer - A

Answer- A. Multiple small petechial hemorrhage

Multiple small petechial hemorrhage <2cm diameter in cerebral hemisphere.

1783. Rhese view is used for -

a) Superior orbital foramen

b) Inferior orbital foramen

c) Optic foramen

d) Sella turcica

Correct Answer - C

Answer- C. Optic foramen

Optic foramen- Rhese view

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1784. Prevertebral space thickness in adult is

-

a) 7mm

b) 14mm

c) 22mm

d) 30mm

Correct Answer - A:C

Answer- A & C. 22mm (A) 7mm

< 7mm at C1 level

< 5mm at C3 - C9level

< 22mm at C6 level

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1785. Osteolytic metastasis is seen with -

a) Lung

b) Kidney

c) Thyroid

d) All of the above

Correct Answer - D

Answer- D. All of the above

Osteolytic, characterized by destruction of normal bone, present in multiple myeloma (MM), renal cell carcinoma, melanoma, non-small cell lung cancer, non-hodgkin lymphoma, thyroid cancer or langerhans-cell histiocytosis.

1786. Investigation of choice in whole body imaging in metastasis is -

a) Magnetic Resonance Imaging

b) Angiography

c) Venography

d) CT Scan

Correct Answer - A

Answer- A. Magnetic Resonance Imaging

Whole-body MR imaging with use of a rolling table platform in conjunction with fast T2-weighted turbo spin-echo and 3D gradient-echo sequences is a time-saving and accurate alternative to conventional multimodality evaluation of patients with tumors for metastases.

1787. T sign is seen in -

- a) Genital TB
- b) Membrane in twin pregnancy
- c) Molar pregnancy
- d) Choriocarcinoma

Correct Answer - B

Answer- B. Membrane in twin pregnancy

'T sign' refers to appearance of the inter-twin membrane in a monochorionic twin pregnancy.

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1788. Investigation of choice in congenital uterine anomaly is -

a) MRI

b) CT

c) HSG

d) Hysteroscopy

Correct Answer - D

Answer- D. Hysteroscopy

Hysteroscopy is the gold standard in the diagnosis as well as therapeutic management.

1789. Which one of the following has the maximum ionization potential?

a) Proton

b) Electron

c) Helium ion

d) Gamma (γ) – Photon

Correct Answer - C

Helium ion has maximum ionizing potential.

The ionizing potential of atoms ranges from a few eV for alkali elements to 24.6eV for helium which has the maximum ionizing potential.

Ref: Radiation Physics for Medical Physicists By Ervin B. Podgoršak, Page 7

1790. The X-ray view for supra orbital fissure is:

a) Towne's

b) Caldwell

c) AP

d) nasal

Correct Answer - B

Ans. Caldwell

- Superior orbital fissure can also be seen on water's view, but best is caldwell view.

"The superior orbital fissure can easily indentified and normally has a slightly concave lateral appearache"

- Text book of oral radiology

1791. Maximum radiation dose tolerable tissue is -

a) Hemopoietic tissue

b) Testis

c) Ovary

d) Bone

Correct Answer - D

Answer- D. Bone

Highly radiosensitive

- Lymphoid tissue
- Bone marrow
- GIT epithelium
- Gonads (Testis, ovary)
- Embryonic tissue

1792. Epidermoid cyst can be differentiated from arachnoid cyst by -

a) MRI

b) USG

c) Myelography

d) CT scan

Correct Answer - A

Answer- A. MRI

Myelography cannot differentiate reliably between an epidermoid cyst and a noncommunicating arachnoid cyst.

It has largely been replaced by MRI.

1793. Well dressed man came for feeling of women trapped in man body is suffering from ?

a) Paraphilia

b) Transverium

c) Gender identity disorder

d) Protterurism

Correct Answer - C

Ans. is 'c' i.e., Gender identity disorder

Gender identity disorder

- These disorders are characterized by disturbance in gender identity, i.e., the sense of one's masculinity or femininity is disturbed. Gender identity disorders has following two characteristics : ?
 1. A strong and persistent cross gender identification which is manifested by : ?
 - .. Repeatedly stated desire to be, or the insistence that he or she is , of the other sex.
 - .. Wearing the clothes of other sex (cross dressing), Preference for cross-sex roles in plays or fantasies, Preference for playmates of the other sex.
 2. Persistent discomfort with his or her sex.
- Important gender identity disorders are : -
 - .. Transsexualism : - It has all the characteristic of gender identity disorder (see above). The most characteristic feature is that there is marked preoccupation with the wish to get rid of one's genitals and secondary sex characteristics and to adopt the sex characteristics of other sex (perceived-gender), e.g., Female transsexuals request for

- hysterectomy or mastectomy.
2. Dual-role transvestism : - It is characterized by wearing of clothes of opposite sex in order to enjoy the temporary experience of membership of the opposite sex, but without any desire for a more permanent sex change (unlike transsexualism). Both transsexualism and dual-role transvestism should be differentiated from transvestism (fetishistic transvestism) which is not a gender identity disorder and characterized by wearing the clothes of other sex for the purpose of sexual excitement.
 3. Gender-identity disorder of childhood : - This disorder is similar to transsexualism with a very early age of onset (2-4 years of age).

1794. Psychoanalysis was started by ?

a) Eugen Bleuler

b) Sigmund Freud

c) Bleuler

d) Erikson

Correct Answer - B

Ans. is 'b' i.e., Sigmund Freud

Name	Contribution
Sigmund Freud	Psychoanalysis, free association, (oedipus & electra complex), cocaine in psychiatry, Repression, ego-defence mechanisms, psychodynamic theory.
Phillippe Pinel	Moral and humane treatment of mentally ill
Jones Maxwell	Propagated therapeutic community concept.
Kubler-Ross	Classified five stages of death.
Erik Erikson	Divided life cycle in 8 stages

1795. Term Psychiatry was coined by ?

a) Moral

b) Johann reil

c) Bleuler

d) Pinel

Correct Answer - B

Ans. is 'b' i.e., Johann reil

IMPORTANT CONTRIBUTORS IN PSYCHIATRY

Term	Coined by
	Moral
	Emil
	Kraepelin
Demence precocce	Kahlbaum
Dementia precox	Hecker
Catatonia, cyclotymia	Eugen
Hebephrenia	Bleuler
Schizophrenia	Eugen
Ambivalence	Bleuler
Free association	Sigmund
Psychoanalysis,	Freud
Psychodynamics	Sigmund
Id, ego, Superego	Freud
Psychiatry	Sigmund
	Freud
	Johann
	christion Reil

1796. Hallucinations, true is ?

- a) Perceived in the inner subjective space
- b) There is misinterpretation of external stimulus
- c) There is no external stimulus
- d) Can be controlled by voluntary effort

Correct Answer - C

Ans. is 'c' i.e., There is no external stimulus

- **Characteristics of Hallucinations** :?

1. Absence of corresponding external perceptual stimuli.
2. Vividness, force and reality value of a normal perception.
3. The experience occurs spontaneously
4. It cannot be produced or terminated at will by subject (not in conscious or voluntary control).
5. Perceived as being in external objective space.
6. Have relative permanency (i.e. remain constant and unchanged).
7. Hallucinations are usually experienced alongside and simultaneously with normal perception.

1797. Cotard's syndrome has ?

- a) Persecutory delusions
- b) Religious delusions
- c) Nihilistic delusions
- d) Hypochondrical delusions

Correct Answer - C

Ans. is 'c' i.e., Nihilistic delusions

Types of delusions

- Based on the contents of delusions, they are divided into :-
 1. Persecutory delusions (paranoid) : - The patient feels that he is being persecuted against. There is false belief that one is being harmed, threatened, cheated, poisoned, harassed or spied on or is a victim of conspiracy to damage his reputation. The supposed persecutor of the patient may be people in the environment (e.g., members of family, neighbours, former friend) or may be political or religious groups. These delusions occur in schizophrenia (especially paranoid), severe affective disorders (severe mania or severe depression), and organic brain syndrome. This is the most common type of delusion. Delusion of persecution may occur in the context of primary delusional experiences, auditory hallucinations, bodily hallucinations or experiences of passivity.
 2. Grandiose delusion (expansive delusions) : - False belief that one is exceptionally powerful, talented or important. These delusions seen most commonly in mania, However, can also occur in schizophrenia and organic states.
 3. Delusions of reference : - False belief that certain objects, people or events have intense personal significance and refer specifically to one self, e.g., believing that a television news reader is talking

directly about oneself, or people walking on the road are talking about him. These delusions are seen in schizophrenia, mania and organic states.

- i. Religious delusions : - False belief pertaining to a religious theme, often grandiose in nature, e.g., believing that one is a special messenger from God. These delusions are seen in schizophrenia.
- ii. Delusions of love (erotomania) : - False belief that another person is in love with one (commoner in woman). In one form, termed de clercambault syndrome, a woman (usually) believes that a man, frequently older and of higher status, is in love with her.
- iii. Delusion of infidelity (morbid jealousy, othello syndrome :- False belief that one's lover has been unfaithful. These are seen in schizophrenia, alcohol related psychosis, organic states.
- iv. Delusion of misidentification : - a) Capgras syndrome (Delusion of double) : - Belief that a familiar person has been replaced by an exact double i.e. an impostor. b) Fregoli syndrome : - Belief that a complete stranger is actually a familiar person already known to one.
- v. Delusion of self accusation or guilt : - False feeling of remorse of guilt. It occurs in Depression.
- vi. Nihilistic delusions : - False belief that oneself, others or the world is non-existent or about to end. There are pessimistic ideas that the patient's career is finished, he is about to die, world is doomed. These occur in severe depression. If nihilistic delusions are accompanied by ideas concerning bodily function failure, e.g., putrefaction of intestines, etc., the syndrome is called COTARD'S SYNDROME.
- vii. Hypochondriacal delusions : - False belief about one's health, patient wrongly believes that he has severe medical illness, contrary to all medical evidences. It is seen in depression.
- viii. Delusion of infestations : - False belief that one is infested with small but visible organisms. As a monosymptomatic delusional disorder this is called EKBOM SYNDROME. It is seen in acute confusional state (due to drugs or alcohol withdrawal), in schizophrenia, in dementing illness, and as delusional elaboration of tactile hallucinatory experiences (secondary to formication).
- ix. Delusion of control : - Belief that his actions, impulses or thoughts are controlled by an outside agency and accordingly called as made

action, made impulse or made affect. Also called somatic passivity experiences (passivity phenomenon). Commonly seen in schizophrenia.

3. Delusions concerning possession of thoughts - Patients with delusions about possession of thoughts may lose the conviction that their thoughts are their own. Most commonly seen in schizophrenia.
- Delusions of thought insertion - thoughts have been implanted by an outside agency.
- Delusions of thought withdrawal - thoughts are being taken out of their mind. This is usually accompanied by "thought block".
- Delusions of thought broadcast - unspoken thoughts are known to other people through radio, telepathy or in some other way.

1798. Waxy flexibility is a feature of ?

a) Echopraxia

b) Catatonia

c) Stereotype

d) Mannerism

Correct Answer - B

Ans. 'B' i.e., Catatonia

Catatonia may be of following types:-

- Catatonic excitement:- Excited, uncontrolled motor activity, not influenced by external stimuli.
- Catatonic posturing:- Voluntary adoption of an unusual or bizarre position that is then maintained for some time.
- Catatonic rigidity:- Maintaining a fixed position and rigidity resisting all attempts to be moved.
- Waxy flexibility (flexibilitas cerea or catalepsy): - Maintaining of particular posture imposed on the patient by the examiner, even if the posture is bizarre and uncomfortable, i.e., the patient can be molded like wax into a position that is then maintained.
- Catatonic stupor:- Patient is mute and immobile (akinetic mutism) but fully conscious.
- Catatonic negativism .- A seemingly motiveless resistance to all instructions or attempts to be moved.
- Automatic obedience:- Exactly reverse to negativism, i.e., unhesitating compliance to all instructions without apparent conscious control.

1799. Visual hallucinations are seen in all except ?

a) Delirium

b) Depression

c) Schizophrenia

d) Alcohol withdrawal

Correct Answer - B

Ans. is 'b' i.e., Depression

Type of hallucination

Causes

Auditory	• Schizophrenia, Organic brain syndrome, Alcoholic hallucinosis manic-depressive illness, Brain lesions → Pontine or temporal lobe lesions. • Organic brain disturbances : - Delirium, delirium tremens, occipital lobe tumors, epilepsy, dementia • Intoxication (LSD, amphetamines, Alcohol, mescaline), alcohol withdrawal.
Visual	• Brain lesions 1. Unformed visual hallucinations :- Disorders of occipital lobe or ocular diseases. 2. Formed visual hallucinations :- Disorders of temporal lobe, upper brain stem or thalamus • Schizophrenia • Temporal lobe diseases (e.g., complex partial seizure).
Olfactory & gustatory	• Olfactory hallucination may also occur in depression & schizophrenia

Tactile

- Schizophreni
- Formication :- Cocaine, alcohol withdrawal

Note : Epilepsy and cerebral disorders can cause hallucinations of all modalities depending on the site of lesions.

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1800. Which of the following can cause delirium ?

a) Hypoxia

b) Barbiturates

c) Alcohol withdrawal

d) All of the above

Correct Answer - A

Ans. is `d' i.e., All of the above

Important causes of delirium

1. Trauma : - Head injury, subdural hematoma
2. Infection : - Septicemia, pneumonia, endocarditis.
3. Metabolic : - Hypoxia, hypercapnia, uremia, CHF, Hepatic failure, porphyria, metabolic acidosis or alkalosis, water & electrolyte imbalance.
4. Endocrine : - Hypo- or hyperpituitarism, Hypo- or Hyperthyroidism, Hypo- or hyperparathyroidism, hypo- or hyperadrenalism.
5. Drug intoxication : - Alcohol, barbiturates, TCA, anticholinergics, anticonvulsants.
6. Drug withdrawal : - Alcohol (delirium tremens), sedatives, hypnotics.
7. Nutritional deficiency : - Vitamin (Thiamine, pyridoxine, Niacin, B12, Folic acid), Protein.
8. Other : - Post-operative, seizures, sleep deprivation

1801. Total score in Mini Mental Status Examination (MMSE) is ?

a) 25

b) 30

c) 32

d) 35

Correct Answer - B
Ans. is 'b' i.e., 30

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1802. Diagnostic criteria for drug dependence includes all except -

- a) Tolerance
- b) Withdrawal symptoms
- c) Early completion of tasks
- d) Larger dose than usual

Correct Answer - A

Ans. is 'c' i.e., Early completion of tasks

Diagnostic criteria for substance abuse

- To make a diagnosis of dependence, three or more of the following criteria should be present.
- Tolerance :- Same dose produces markedly diminished effect on continuous use, therefore increased doses are required to produce same effect.
- Withdrawal symptoms on abstinence.
- Substance is taken in larger amount or longer period than was intended.
- Persistent desire (craving) or sense of compulsion to take the substance.
- A great deal of time spent to obtain the substance, to use substance or to recover from its effect.
- Neglect of important social, occupational and recreational activities.
- Continued substance use despite clear evidence of overtly harmful consequences

1803. False regarding delirium tremens ?

- a) Tremors
- b) Ophthalmoplegia
- c) Visual hallucination
- d) Clouding of consciousness

Correct Answer - B

Ans. is 'b' i.e., Ophthalmoplegia

Delirium tremens

- Delirium tremens is the *most severe alcohol withdrawal syndrome*. It occurs usually within 2-4 days of complete or significant alcohol abstinence. This is an *acute organic brain syndrome (delirium)* with characteristic features of delirium.
 1. Clouding of consciousness with disorientation in time and place.
 2. Poor attention span and distractability.
 3. Visual (and also auditory) hallucination, and illusion. Tactile hallucination of insect crawling under the skin (formication) may also occur.
 4. Marked autonomic disturbances with tachycardia, sweating, hypertension, mydriasis, coarse tremors.
 5. Insomnia, psychomotor agitation, ataxia, anxiety.
- Benzodiazepines are the drugs of choice for delirium tremens. Chlordiazepoxide is the agent of choice with diazepam as an alternative.

1804. A patient is known alcoholic since last 20 yrs, suddenly he develops restless tremors, agitation. Diagnosis ?

a) Delirium tremens

b) Psychosis

c) Wernicke's encephalopathy

d) Korsakoff's syndrome

Correct Answer - A

Ans. is 'a' i.e., Delirium tremens

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1805. Earliest symptom showing improvement from classical triad of Wernicke's encephalopathy to thiamine therapy ?

a) Ataxia

b) Ophthalmoplegia

c) Confusion

d) All are equally responsive

Correct Answer - B

Ans. is 'b' i.e., Ophthalmoplegia

Response to thiamine treatment in Wernicke's encephalopathy

- Ocular symptoms :- Earliest to respond, ophthalmoplegia (ocular palsies) improves within hours of thiamine administration. However, horizontal nystagmus may persist.
- Ataxia :- Ataxia responds more slowly than ocular palsies and half the patients recover incompletely with a residual ataxia.
- Encephalopathy :- Confusion and other CNS symptoms improve more slowly. As the symptoms of encephalopathy improve, Korsakoff's syndrome may become apparent in some patients

1806. All are symptoms of morphine withdrawal except?

a) Mydriasis

b) Yawning

c) Lacrimation

d) Fall in BP

Correct Answer - D

Ans. is 'd' i.e., Fall in BP

Morphine withdrawal

- Manifestations of morphine withdrawal
 1. Lacrimation
 2. Anxiety & fear
 3. Mydriasis
 4. Diarrhea
 5. Palpitation
 6. Sweating
 7. Restlessness
 8. Insomnia
 9. Dehydration
 10. Rapid weight loss
 11. Yawning
 12. Gooseflash (Piloerection)
 13. Abdominal colic
 14. Rise in BP
- Delirium and convulsions are not a characteristic features (contrast barbiturates) and are seen only occasionally.
- Treatment consists of withdrawal of morphine and substitution with oral methadone followed by gradual withdrawal of methadone.

- Recently the NMDA antagonists and nitric oxide synthetase inhibitors have been

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1807. Classical triad of global confusion, ataxia and ophthalmoplegia is seen in ?

a) Alzheimer's disease

b) Delirium tremors

c) Wernicke's encephalopathy

d) Korsakoff psychosis

Correct Answer - C

Ans. is 'c' i.e., Wernicke's encephalopathy

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1808. Drug used for cocaine withdrawal symptoms is-

a) Floxetine

b) Lorazepam

c) Phenobarbital

d) No drug

Correct Answer - D

Ans. is 'd' i.e., No drug

- "Tolerance develops swiftly but there are no withdrawal symptoms. Treatment, if needed, is symptomatic. Often no medicines are needed and the user can stop its use by himself when he is coerced to do so by the court or the employer" - Namboodiri
- "No pharmacological agents reliably reduce the intensity of withdrawal, but recovery over a week or two is generally uneventful" - Kaplan & Saddock

1809. All are seen in nicotine withdrawal except ?

a) Hyperhydrosis

b) Anxiety

c) Bradycardia

d) Insomnia

Correct Answer - A
Ans. is 'a' i.e., Hyperhydrosis

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1810. Role of marijuana in AIDS related cachexia?

- a) Euphoric
- b) Pschostimulator
- c) Increases appetite
- d) Decrease emetic feeling

Correct Answer - C

Ans. is 'c' i.e., Increases appetite

- Mari-juana or cannabis sativa contains the active principle tetrahydrocannabinol (THC), which as an appetite stimulant effect.

1811. Delusions are features of all except ?

a) Delirium

b) Schizophrenic

c) OCD

d) Alcohol withdrawal

Correct Answer - C

Ans. is 'c' i.e., OCD

Delusions are seen in psychotic disorders

- **Organic**

- .. Delirium (Acute confusional state)
- .. Substance :- Abuse (alcohol, amphetamines) and withdrawal (alcohol).

- **Non organic**

- .. Schizophrenia
- .. Affect/mood disorders (Mania & depression)
- .. Other non-organic psychosis :- Delusional disorders, Schizoaffective disorders.
- Delusions are not seen in neurotic disorders -, Anxiety disorders obsessive-compulsive disorders, Dissociative (conversion) disorders, Somatoform disorders, Stress-related disorders

1812. All are features of psychosis except ?

- a) Loss of insight
- b) Presence of delusions
- c) Preserved contact with reality
- d) Personality disturbances

Correct Answer - C

Ans. is 'c' i.e., Preserved contact with reality

Psychosis

- Psychosis is a mental state involving the loss of contact with reality, causing deterioration of normal social functioning. The characteristic features of psychosis are : -
 1. Gross impairment in reality testing, i.e., loss of contact with reality.
 2. Marked disturbance in personality and behavior with impairment in social, interpersonal and occupational functioning.
 3. Marked impairment in judgement.
 4. Loss of insight (insight is an assessment of how aware the patient is of their own mental illness).
 5. Presence of characteristic symptoms like delusions and hallucinations, these are called psychotic symptoms.
- The major psychosis are : ?
 1. Organic psychotic disorders, e.g., Delirium, substance related psychosis, head trauma.
 2. Non-organic psychoses
 3. Major psychoses : - Schizophrenia, mood disorders (depression, mania, bipolar).
 4. Other psychotic disorders (third psychosis): - Delusional disorders, acute and transient psychotic disorders, schizoaffective disorder

Neurosis

- Neurosis is a general term referring to mental distress that, unlike psychosis, does not prevent rational thought and daily functioning. Characteristic features are : -
 1. Symptoms cause subjective distress to the patient.
 2. Insight is present (symptoms are recognised as undesirable).
 3. The personality and behaviour are relatively preserved as is the judgement.
 4. The contact with reality is preserved.
 5. Absence of organic causative factor
- Important neurotic disorders are Anxiety disorders (Panic), Phobia (Phobic anxiety disorder), obsessive compulsive disorder, Dissociative conversion disorder.

1813. All are features of neurosis except ?

a) Symptoms cause subjective distress

b) Contact with reality preserved

c) Personality disturbances

d) Insight is maintained

Correct Answer - C

Ans. is 'c' i.e., Personality disturbances

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1814. Bleuler's symptoms for schizophrenia are all except?

a) Loosening of association

b) Affect disturbances

c) Autism

d) Hallucinations

Correct Answer - D

Ans. is 'd' i.e., Hallucinations

- Eugen Bleuler renamed dementia precox as Schizophrenia. He recognized that schizophrenia is a group of disorders rather than a distinct entity. Therefore, he used the term, a group of schizophrenias.
- Bleuler described the characteristic symptoms (fundamental symptoms) for schizophrenia which are also known as 4 'A's of Bleuler :?
 1. Ambivalence (coexistence of two opposite feelings and attitude towards the same thing in the same person at the same time).
 2. Autism (Preoccupation with fantasies, delusions and hallucinations to the exclusion of reality).
 3. Affect disturbances (e.g., inappropriate affect)
 4. Association disturbances (e.g., Loosening of association, thought disorder).
- He also described accessory symptoms of *schizophrenia* : - delusions, hallucinations, and negativism.

1815. All are diagnostic symptoms of schizophrenia except?

a) Catatonia

b) Hallucinations

c) Disorganized speech

d) Social withdrawal

Correct Answer - D

Ans. is 'd' i.e., Social withdrawal

Diagnostic criteria for schizophrenia

- Characteristic symptoms :- Two (or more) of the following for a 1 months duration (or less if successfully treated) :?

1. Delusions

2. Hallucinations

3. Disorganized speech

4. Grossly disorganized or catatonic behavior

5. Negative symptoms, i.e., affective flattening, alogia.

Note :- Only one of the above is required if delusions are bizarre or there are third person hallucinations (running commentary or two voices arguing or conversing).

- Social/occupational dysfunction
- Duration :- Continuous signs of disturbance persist for at least 6 months. This 6 months period must include at least 1 month of symptoms that meet criteria A.
- Exclusion of mood disorder and schizoaffective disorder.
- Exclusion of substance abuse/general medical condition.

1816. Good prognostic factor for schizophrenia is ?

- a) Blunted affect
- b) Early onset
- c) Presence of depression
- d) Male sex

Correct Answer - C

Ans. is 'c' i.e., Presence of depression

- Good prognostic factors :- Acute onset; late onset (onset after 35 years of age); Presence of precipitating stressor; Good premorbid adjustment; catatonic (best prognosis) & Paranoid (2nd best); short duration (< 6 months); Married; Positive symptoms; *Presence of depression*; family history of mood disorder; first episode; pyknic (fat) physique; female sex; good treatment compliance & good response to treatment; good social support; presence of confusion or perplexity; normal brain CT Scan; outpatient treatment.

1817. Poor prognostic factor for Schizophrenia-

a) Presence of depression

b) Female sex

c) Presence of stressor

d) Early onset

Correct Answer - D

Ans. is 'd' i.e., Early onset

- Poor prognostic factors :- Insidious onset, *early onset* (before 20 years of age); *absence of precipitating stressor*; poor premorbid adjustment; hebephrenic subtype (worst prognosis), simple, undifferentiated and chronic catatonic subtype; long duration (chronic course —> >2 years); single / divorced; Negative symptoms; *absence of depression*; *family history of schizophrenia*; past history of schizophrenia; asthenic (thin) physique; male sex; poor treatment compliance & poor response to treatment; poor social support; flat or blunted affect; ventricular enlargement on brain CT scan; hospitalization & indoor treatment

1818. Schizophrenia is more common in which socioeconomic strata ?

a) Middle

b) Upper

c) Low

d) Upper middle

Correct Answer - C

Ans. is 'c' i.e., Low

- 'Schizophrenia is more prevalent in patients having a lower socioeconomic status'. - Namboodiri

Etiology of Schizophrenia

- The exact etiology is not clear. Experts think schizophrenia is caused by several factors.

1. Heredity (Genetic factors)

- Schizophrenia runs in families. The illness occur in 0.5-1% of general population. However, First degree relative of schizophrenic patients have a 10 times more lifetime risk of having illness. The risk is 3-6 times and 2 times more in second and third degree relatives, respectively

2. Environmental factors

- Environmental factors and stress are important in precipitating schizophrenia in many individuals. These factors are : ?
 - 1. Socioeconomic : - Low socio-economic status, Industrialization; Immigration; families with high expressed emotions; Nuclear families; Schisms & skewed families; and pseudomutual & pseudohostile families.
 - 2. Drugs : - Drugs causing schizophrenia like state are amphetamine (most common causative drug), LSD, Phencyclidine, ketamine,

Mescaline, Cocaine, Cannabis.

3. Metabolic & Neurological disorders : - Schizophrenia like symptoms may occur in Huntington's chorea (early stage), homocystinuria, acute intermittent porphyria, Wilson's disease and hemochromatosis.

3. Biochemical factors

- Dopamine hypothesis is the most accepted hypothesis for schizophrenia. There is hyperactivity of dopaminergic system. This hypothesis is supported by: 1) Amphetamine and cocaine which release dopamine in central synapses induce schizophrenia like symptoms; and 2) Antipsychotic drugs control the schizophrenic symptoms by blocking dopamine (D₂) receptors. However, the dopamine hypothesis has been questioned also as Homovanillic acid (HVA the principal metabolite of dopamine) is not elevated and prolactin level is not decreased (Dopamine has inhibitory action on prolactin release).
- Other neurotransmitters involved are : - Increased serotonin, Decreased GABA, variable change (Increased or decreased) glutamate, and increased norepinephrine.

1819. Schizophrenia results with ?

- a) Increased GABA
- b) Decreased norepinephrine
- c) Increased dopaminergic activity
- d) Decreased dopaminergic activity

Correct Answer - C

Ans. is 'c' i.e., Increased dopaminergic activity

- Dopamine hypothesis is the most accepted hypothesis for schizophrenia. There is hyperactivity of dopaminergic system. This hypothesis is supported by: 1) Amphetamine and cocaine which release dopamine in central synapses induce schizophrenia like symptoms; and 2) Antipsychotic drugs control the schizophrenic symptoms by blocking dopamine (D₂) receptors. However, the dopamine hypothesis has been questioned also as Homovanillic acid (HVA the principal metabolite of dopamine) is not elevated and prolactin level is not decreased (Dopamine has inhibitory action on prolactin release).
- Other neurotransmitters involved are : - Increased serotonin, Decreased GABA, variable change (Increased or decreased) glutamate, and increased norepinephrine.

1820. In stupor catatonia, all are seen except -

a) Agitation

b) Catalepsy

c) Mutism

d) Akinesia

Correct Answer - A

Ans. is 'a' i.e., Agitation

- Agitation is seen in excited catatonia (not in stupor catatonia).
- Features of catatonic schizophrenia may be :?
 1. Excited catatonia :- It is characterized by *increased in psychomotor activity*, i.e. restlessness, *agitation*, excitement, aggressiveness, violence. The impulsive activity occurs in response to *hallucination* and delusions.
 2. Stuporous (retarded catatonia) :- It is characterized by *extreme retardation of psychomotor activity*. It includes *mutism, rigidity, negativism*, posturing, stupor, *echolalia*, echoprosia, catalepsy (*waxy flexibility*), ambitendency, *gegenhalten*, stereotypies, stupor, mannerism, *Grimacing, automatic obedience*.

1821. All are true about type 1 schizophrenia except?

a) Acute illness

b) Good prognosis

c) Negative symptoms

d) Intellect maintained

Correct Answer - C

Ans. is 'c' i.e., Negative symptoms

	Type I (Reactive or acute schizophrenia)	Type II (Process schizophrenia)
Characteristic symptoms	Positive symptoms (Hallucination, Acute Delusion, Thought)	Negative symptoms (Affect flattening, poverty of speech loss of drive)
Type of illness	Chronic	Chronic
Response to neuroleptics	Good	Poor
Outcome	Reversible	Long standing
Intellectual impairment	Absent	Sometimes present
Etiology	Dopamine overactivity	Structural changes in brain (dilated ventricle on CT scan)
	Good	Poor

1822. Ganser syndrome is a feature of ?

- a) OCD
- b) Conversion disorder
- c) Dissociative disorder
- d) Schizoid personality disorder

Correct Answer - C

Ans. is 'c' i.e., Dissociative disorder

Dissociative disorder

- The essential feature of the dissociative disorder is a disruption in the usually integrated functions of consciousness, memory, identity or perception of the environment. Dissociative disorder are :-
 - 1. Dissociative (psychogenic) amnesia :- It is the most common type of dissociative disorder. Dissociative amnesia is characterized by retrograde amnesia (inability to retrieve stored memories and events leading up to onset of amnesia) and absence of antegrade amnesia (inability to form new long term memories).
 - 2. Dissociative fugue :- A dissociative fugue may be present when a person impulsively wanders or travels away from home and upon arrival in the new location is unable to remember his/her past (i.e., amnesia for early life). There is loss of personal identity and the person assumes a new identity. There is absence of awareness of amnesia during fugue episode, i.e., Patient denies any memory loss during fugue state. On recovery there is amnesia for fugue episodes and recovery of memory of earlier life (i.e., before the episode of fugue).
 - 3. Dissociative identity disorder (multiple personality disorder) :- More than one personality appears to possess the individuals, Showing their characteristic behavior. At any instance behavior and memories

of one personality is exhibited, patient then is unaware of the other's existence.

- i. Depersonalization disorder : - Feeling of detachment from self is referred to as depersonalization. Individuals with this disorder will report feeling as if they are living in a dream or watching themselves on movie screen i.e., feeling detached from self and as if one is an outside observer of oneself. People with this disorder feel like they are "going crazy" and they frequently become anxious and depressed
5. Dissociative disorders not otherwise specified :- These are the disorders that are characterized by dissociative response that do not meet diagnostic criteria for one of the other dissociative disorder. Important ones are :-
 - Dissociative Trance (Possession) disorders :- There is temporary exchange of person's personality by a new personality usually attributed to a spirit or divine power. Usually the person is aware of the existence of the other, i.e., possessor (unlike dissociative identity disorder).
 - Ganser's syndrome : - Also known as syndrome of approximate answers. This is characterized by giving approximate answers together with a clouding of consciousness, and frequently accompanied by hallucinations and other dissociative, somatoform or conversion symptoms.

1823. Neurotransmitter in mania -

- a) Increased dopamine
- b) Decreased dopamine
- c) Increased norepinephrine
- d) Decreased norepinephrine

Correct Answer - C

Ans. is 'c' i.e., Increased norepinephrine

Neurotransmitters in mood disorders

- Most accepted biochemical hypothesis for mood disorders is the monoamine hypothesis, according to which serotonin and norepinephrine are the major neurotransmitters involved in mood disorders : -
 - .. Depression --> Decrease in serotonin and norepinephrine. Serotonin is the most important neurotransmitter in depression.
 - ?. Mania --> Increased level of norepinephrine
- Patients suffering from severe depression with suicidal intent/attempt appear to have a marked decrease in serotonin.
- Acetylcholine and GABA are the other neurotransmitters which are involved in mood disorders.

1824. For diagnosis of mania symptoms should be-

a) > 1 week

b) > 3 weeks

c) >2 week

d) > 4 weeks

Correct Answer - A

Ans. is 'a' i.e., > 1 Week

Diagnostic criteria for Mania

- Three or more of the following for at least 1 week : -
 1. Inflated self esteem or grandiosity
 2. Decreased need for sleep
 3. Overtalkativeness
 4. Flight of ideas or racing thoughts
 5. Distractibility
 6. increased goal directed activity or psychomotor agitation
 7. Excessive involvement in pleasurable activities that have a high potential for painful consequences.
- The mood disturbance is sufficiently severe to cause marked impairment in occupational & social functioning, or there are psychotic features.
- If the symptoms occur for 4 days, and do not cause impairment of social/occupational functioning, and psychotic feature are absent, then the diagnosis is hypomania.

1825. Pathognomonic of maniac episode is ?

- a) Elevated mood
- b) Grandiosity
- c) Decreased appetite
- d) Increased sleep

Correct Answer - B

Ans. is 'b' i.e., Grandiosity

- Option 'a' is confusing one. Yes, elevated mood is one of the most classical symptom of mania. But it is not pathognomonic.
- Pathognomonic means a symptom which can be used for diagnosis. Elevated mood is not a symptom of diagnostic criteria of mania.

Diagnostic criteria for mania

- Three or more of the following for at least 1 week :-
 1. Inflated self esteem or grandiosity
 2. Decreased need for sleep
 3. Overtalkativeness
 4. Flight of ideas
 5. Distractibility
 6. Psychomotor agitation or Increased goal directed activitie
 7. Excessive involvement in pleasurable activities

Important symptoms of mania

- 1. Elevated mood :- Euphoria, elation, exatlation, ectasy, high self esteem.
- 2. Thought & speech :- Pressure of speech (Talkativeness), flight of ideas, delusion of grandeur, delusion of persecution, distractibility.
- 3. Increased psychomotor activity :- Overactiveness, restlessness, increased energy.
- 4. Goal directed activity :- Patient is alert, trying to do many things at

one time.

- 5. Psychotic features :- Delusions and hallucination.
- 5. Other :- Increased sexual drive, aggressive behavior, decreased need for sleep (insomnia), spending excessive money, increased appetite, impaired judgement, social & occupational dysfunction, absent insight.

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1826. Cyclothymia is a type of ?

- a) Bipolar mood disorder
- b) Major depression
- c) Dysthymia
- d) Persistent mood disorder

Correct Answer - D

Ans. is 'd' i.e., Persistent mood disorder

Persistent mood disorder

- Mood disorders may run a chronic course over years with fluctuation of mood interposed with symptom free intervals. If symptoms persist for more than 2 years, they are referred to as persistent mood disorders. Two most important persistent mood disorders are :?
- 1. Cyclothymia :- It is a subdued version of bipolar disorder, characterized by episodes of depression and hypomania that never have sufficient intensity to meet full diagnostic criteria for bipolar disorder.
- 2. Dysthymia :- Long standing (persistent, i.e., 2 years) mild depression which is not severe enough to meet full diagnostic criteria for major depression. Symptoms are more prominent than signs (more subjective than objective depression). This means that disturbances in appetite and libido are uncharacteristic, and psychomotor agitation or retardation is not observed.

1827. All are required to diagnose major depression except ?

- a) Depressed mood
- b) Isomnia
- c) Nihilistic ideas
- d) Decreased concentration

Correct Answer - C

Ans. is 'c' i.e., Nihilistic ideas

Diagnostic criteria for major depression

- 5 or more of following symptoms should be present most of the day for at least 2 weeks: ?
 1. Depressed mood
 2. Loss of interest or pleasure in all activities.
 3. Decrease/increase appetite or loss/gain of weight.
 4. Insomnia or hypersomnia (Increased or decreased sleep).
 5. Psychomotor retardation or agitation (decreased or increased psychomotor activity).
 6. Fatigue or loss of energy (weakness or lethargy).
 7. Feelings of worthlessness or excessive guilt.
 8. Diminished concentration
 9. Recurrent thoughts of death or recurrent suicidal ideation or suicidal attempt.
- At least one of symptoms should be either :?
 1. Depressed mood or 2) Loss of interest or pleasure —) These two (1 & 2) are essential criteria. Therefore 1 essential criterion and 4 other criteria (total 5) should be present.

1828. Suicide is most common in ?

a) Depression

b) Alcohol dependence

c) Dementia

d) Schizophrenia

Correct Answer - A

Ans. is 'a' i.e., Depression

Causes/Risk factors for suicide

- Psychiatric disorders : - Depression (most common), alcoholism (2nd mc), Drug/Substance dependence, Schizophrenia, Dementia.
- Physical illness : - Cancer, AIDS, Multiple sclerosis, Head trauma.
- Psychosocial factors : - Failure in love, marital difficulties, family dispute, illegitimate pregnancy.
- Biological factors : - Decrease in serotonin
- Other - Male sex, Age > 40 years, Single (Unmarried, divorced or widowed), previous suicide attempt, social isolation.

1829. Folie-a-deux means ?

a) Delusion of persecution

b) Sharing of delusion

c) Delusion of double

d) None

Correct Answer - B

Ans. is 'b' i.e., Sharing of delusion

- It is also known as shared psychotic disorder or symbiotic psychosis.
- It is characterized by sharing of delusions between two person (Folie a deux) or rarely between more individuals (Folie a trois, Folie a quatre, Folie a famine).
- There is a dominant (active) person who induces delusions into the other (passive receptor or dependent person) -4 Dependent person accepts the delusion of dominant person.
- On separation of two, dependent person may give up his delusions, however the active (dominant) person often requires treatment

1830. Which of the following is delusion ?

- a) Othello syndrome
- b) Declerambault's syndrome
- c) Pyromania
- d) None

Correct Answer - A

Ans. is 'a' i.e., Othello syndrome & 'la' i.e., Declerambault's syndrome

Delusional disorders (Persistent delusional disorders)

- Delusional disorder, previously called as paranoid disorder, is a group of disorders where *long standing delusions are the primary or only manifestation of illness*. Persistent delusions must be present for at least 3 months (ICD-10) or for at least 1 month (DSM - IV).
- Depending on the content following type of delusions may occur.
- 1. Delusions of persecution : - These are the *most common type* of delusions. The patient believes that he is conspired against and harassed or bodily injured, spied or followed or poisoned by other. Patient believes that he is under the surveillance of police, as his neighbours have complained against him; or he is watched and the news in the newspaper refer to him.
- 2. Somatic (Hypochondrical) delusions : - There are delusions *related to the patients body or its part*. This condition is also referred to as *monosymptomatic hypochondrical psychosis (MHP) or hypochondrical paranoia*. Examples are : ?
 - Body or its part being ugly or misshapen, i.e., nose is deformed —> *Delusional dysmorphophobia*.
 - Infestations by worms or foreign bodies ---> *Delusional parsitosis*.
 - Emitting a foul odor —> *Delusional halitosis*.

3. Delusions of grandeur : - Delusions of *inflated self esteem and self image*. The patient may believe that he is an important person who is able to help other, or may report hearing the voice of God and the Saints, Confirming their elevated status.

4. Delusions of jealousy (infidelity) : - Content of delusions is predominantly jealousy (infidelity) involving the spouse --> Othello syndrome or *Conjugal paranoia*. Elaborate steps are taken to prevent the spouse to go outside (Locks the spouse, not allowing her go outside), or to catch the spouse red handed (private detectives).

5. Delusion of love (Erotomaniac delusion or erotomania) : - More prevalent *among females* and there is an erotic conviction that a person with higher status is in love with patient—) Declerambault's syndrome.

1831. The delusion which involves replacement of a familiar person by someone else is ?

a) Capgras syndrome

b) Cotard syndrome

c) Othello syndrome

d) None

Correct Answer - A

Ans. is 'a' i.e., Capgras syndrome

- DSM is characterized by misidentification delusions of other or self. Four main syndromes are differentiated : ?
 1. Capgras syndrome (Delusion of double) : - Patient falsely sees a familiar person as a complete stranger who is importing on him as a familiar person.
 2. Fregoli syndrome (illusion de fregoli) : - The patient falsely identifies stranger as familiar person.
 3. Syndrome of subjective double : - The patients own self is perceived as being replaced by a double.
 4. Syndrome of intermetamorphosis : - A false belief that a person can transform into another person.
- These syndrome most commonly appear in schizophrenia. Other causes are Alzheimer syndrome, head injuries, and delusional disorders.

1832. Doppelganger is-

- a) Shadow following person
- b) Feeling of double of oneself
- c) Identification of stranger as familiar
- d) None of the above

Correct Answer - B

Ans. is 'b' i.e., Feeling of double of oneself

- Doppelgangers (subjective double) is the delusion that there is double of oneself. A person feels that double of himself exists elsewhere.

1833. Acute and transient psychotic disorder, onset of symptoms ?

a) < 1 weeks

b) < 2 weeks

c) < 3 weeks

d) < 4 weeks

Correct Answer - B

Ans. is 'b' i.e., < 2 weeks

Acute and transient psychotic disorder

- These psychotic disorders are characterized by an abrupt (less than 48 hours) or an acute (Less than 2 weeks) onset of symptoms. Three types have been recognized (according to ICD-10).
- .. Acute polymorphic psychotic disorder without symptoms of schizophrenia : - Hallucinations, delusions, and other psychotic symptoms are present and are varied and constantly changing, just like emotional status. None of them is consistent as to qualify for a diagnosis of schizophrenia. The polymorphic and unstable picture is characteristic of illness .
- 2. Acute polymorphic psychotic disorder with symptoms of schizophrenia : - Polymorphic and unstable symptoms occur along with consistent symptoms of schizophrenia.
- 3. Acute schizophrenia - like psychotic disorder : - Except for acute and shorter duration of symptoms they resemble schizophrenia in total. Symptoms occur for less than 1month. Under DSM IV classification, it is classified as brief psychotic disorder.

1834. Time interval between acute and persistent psychotic disease is ?

a) 1 week

b) 2 week

c) 3 week

d) 1 months

Correct Answer - D

Ans. is 'd' i.e., 1 months

- If symptoms are for less than 1 months, it is transient psychotic disorder and if there are for more than 1 months, it is persistent psychotic disorder (persistent delusional disorder).
Note:- Diagnostic criteria for delusional disorder (Persistent delusion disorder) has different durations in DSM IV and ICD-10 :-
 - .. According to DSM IV, symptoms (Non bizzare delusion) should be for > 1 months.
 - ?. According to ICD-10, Symptoms should be for > 3 months.

1835. Not used for erectile dysfunction ?

a) Beta blockers

b) Sildenafil

c) PG-E,

d) Papaverine

Correct Answer - A

Ans. is 'a' i.e., Beta blockers

Drugs used for erectile dysfunction

1. Phosphodiesterase-5 inhibitors (Sildenafil, Tadalafil, Vardenafil).

- By inhibiting PDE-5, these drugs prevent degradation of cGMP and potentiate the action of NO.
- These are the DOC for pharmacological therapy of erectile dysfunction.

2. Alprostadil (Prostaglandin E1)

- It is a powerful vasodilator
- It acts by increasing arterial inflow by vasodilation and reducing outflow by contracting the corporal smooth muscle that occludes draining venules.
- It is the DOC for patients not responding to PDE-5 inhibitors.
- It is directly injected into corpora cavernosa.

3. Papaverine

- It is a nonspecific phosphodiesterase inhibitor.
- Injection of papaverine with or without phentolamine into corpus cavernosum produces penile tumescence to permit intercourse.
- Repeated injection can cause penile fibrosis.

4. Androgens

- Can be used when androgen deficiency is demonstrated to be

responsible for the loss of libido and erectile dysfunction.

5. Apomorphine (Laurence 9th/e p. 546)

- A dopamine antagonist, is given by subcutaneous injection.

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1836. All are anxiety disorders except ?

a) Phobias

b) OCD

c) Conversion reaction

d) PTSD

Correct Answer - C

Ans. is 'c' i.e., Conversion reaction

Anxiety disorders are :-

1. Panic disorder with or without agoraphobia
2. Agoraphobia with or without panic disorder
3. Specific phobia
4. Social phobia
5. Obsessive - compulsive disorder
6. Post traumatic stress disorder
7. Generalized anxiety disorder

1837. Drug of choice for generalized anxiety ?

a) 3-blocker

b) Alprazolam

c) Buspirone

d) Phenytoin

Correct Answer - B

Ans. is 'b' i.e., Alprazolam

Treatment of generalized anxiety

- Benzodiazepines are the drug of choice. Drugs in this group are diazepam, Lorazepam, Alprazolam, Oxazepam, chlordiazepoxide.
- Other drugs used are buspirone; TCA (amptriptyline, imipramine, clomipramine, desipramine); SSRIs (Fluoxetine, Sertaline, Paroxetine, Citalopram); SNRIs (Venlafaxine), 13-blockers.
- Anticonvulsants with GABAergic properties may also be effective against anxiety, e.g., Gabapentin, Oxcarbazepine, Tiagabine, pregabalin, and Valproate (divalproex).

1838. A student unable to deliver speech before audience is suffering from ?

a) Social phobia

b) OCD

c) Agoraphobia

d) Claustrophobia

Correct Answer - A

Ans. is 'a' i.e., Social phobia

Phobic disorders

- Phobia is persistent and morbid fear of specific situation, object or activity. The fear is morbid because : ?
- .. The fear is irrational : The objects or situations do not produce fear in normal persons.
- 2. The fear is out of proportion to the dangerousness perceived that the affected person avoids the situation permanently.
- 3. Patient is unable to control the fear and is very distressed by it.
- The common types of phobia are : ?

1. Agoraphobia

- This is an example of irrational fear of situations. It is the commonest type of phobia encountered in clinical practice.
- It is characterized by an irrational fear of being in places away from familiar setting of home and patient believes that he cannot escape from these places, to a safer place (usually home). This fear results in avoidance of these places which include public places, stores, crowd, travelling alone in bus, train or plane, Theaters, Tunnels, Bridge, standing in line small enclosed rooms or lifts.
- The patient is afraid of all the places or situations from where escape may be perceived to be difficult if he suddenly develops

embarrassing or incapacitating symptoms. These embarrassing or incapacitating symptoms are the classical symptoms of panic. A full-blown panic attack may occur (agoraphobia with panic disorder) or only a few symptoms (like dizziness or tachycardia) may occur (agoraphobia without panic disorder).

2. Social phobia

- In social phobia there is irrational fear of one or more social or performance situations in which the person is concerned about negative evaluation or scrutiny by others, for example : Public speaking; writing/drinking/eating in public; using public lavatories.
- Feared social or performance situations may produce anxiety symptoms, even a panic attack. Therefore, feared social or performance situations are avoided.

3. Specific (simple) phobia

- These are phobias limited to highly specific situations or objects, for example.
 1. Claustrophobia :- Fear of closed spaces
 2. Acro/Aerophobia :- Fear of high places
 3. Zoophobia :- Fear of animals
 4. Pyrophobia :- Fear of fire
 5. Xenophobia :- Fear of strangers
 6. Algophobia :- Fears of pain
 7. Thanatophobia :- Fear of death
 8. Mysophobia :- Fear of dirt & germs
 9. Erythrophobia :- Fear of blushing
 10. Sitophobia :- Fear of eating
 11. Ailurophobia :- Fear of cats
 12. Sitaphobia :- Fear of dogs
 13. Hydrophobia :- Fear of water

1839. Ataxia abasia is seen in ?

a) Conversion disorder

b) PTSD

c) Depression

d) Manic

Correct Answer - A

Ans. is 'a' i.e., Conversion disorder

Symptoms of conversion disorder

- Sensory symptoms (in ICD -10 dissociative anesthesia & Sensory loss): - Anaesthesia and paresthesia are common, especially of extremities. All sensory modalities (Pain, temperature, touch, proprioception) are affected at same level, and the disturbance is not consistent to the distribution of dermatomes. Thus, clinicians may see the characteristic *glove and stocking anaesthesia* of hands or feet or hemianesthesia of body beginning precisely along the midline. Deafness, blindness or *contracted visual fields (tubular or tunnel vision)*.
- Motor symptoms (In ICD-10 Dissociative motor disorder) : - Abnormal movement, paralysis, Weakness, gait disturbances (ataxia-abasia), Aphonia, Torticollis, Opisthotonus, blepharospasm.
- Seizure symptoms (In ICD-10 Dissociative convulsions) : - Earlier known as *hysterical fits or pseudoseizures*, dissociative convulsions are characterized by convulsive movements and partial loss of consciousness. Dissociative convulsions should be differentiated from true convulsions : -
 - .. Tongue biting, Urinary incontinence and injury are uncommon (in contrast to true convulsions, in which these are common).
 - ?. Never occurs during sleep (in contrast, true convulsions can occur

- anytime and during sleep).
- 3. Usually occur in safe place or indoors (in contrast, true convulsions can occur anywhere).
 - 4. Usually occurs when people are observing (in contrast, true convulsion can occur with or without people observation).
 - 5. Normal prolactin level in postictal period (in contrast, serum prolactin is usually raised in post-ictal period after true convulsions).
 - 6. There is no or partial amnesia about the episode (In contrast, true convulsion has complete amnesia).

1840. All are included in diagnostic criteria of somatization disorder except ?

a) Sexual symptom

b) Pain symptom

c) GI symptom

d) Visual symptoms

Correct Answer - D

Ans. is 'd' i.e., Visual symptoms

Somatization disorder

- The essential features of somatization disorder are multiple recurrent somatic symptoms of long duration (chronic) that are caused by psychological basis and no physical illness can be found.
- The disorder begins before the age of 30 years and then has a chronic course (over a period of several years). Diagnostic criteria for somatization disorder
- Each of the following should be present : ?
 1. Four pain symptoms :- Pain, at least at four different sites or functions – 9 Head (headache), abdomen, back, joint, extremities, chest, rectum, during menstruation or sexual intercourse or urination.
 2. Two gastrointestinal symptoms :- Nausea, bloating, vomiting, diarrhea.
 3. One sexual symptom :- Erectile dysfunction (Impotence), ejaculatory dysfunction, irregular menses, excessive menstrual bleeding.
 4. One pseudoneurological symptom :- Conversion symptoms (impaired coordination or balance, paralysis, weakness, blindness, deafness, glove & stocking anesthesia, Paresthesia, seizure, aphonia); Dissociative symptoms (amnesia); loss of consciousness.

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1841. In personality disorder, features are all except

- a) Ego dystonia
- b) Starts in childhood
- c) Behavior is maladaptive
- d) Disorder results in personal distress

Correct Answer - A

Ans. 'A' i.e., Ego dystonia

Features of personality disorders

- Most often the first sign of a personality disorder appears in late childhood or adolescence and continues during adulthood.
- Someone with a personality disorder holds attitudes and behaves in ways that can cause considerable problems for themselves and others.
- Behaviour is long-standing (not limited to an episode of mental illness).
- Behaviour is pervasive and maladaptive.
- Disorder results in personal distress and social or occupational dysfunction.
- Behavior is fixed and inflexible.
- Personality disorders are ego-syntonic.
- They are not due to a direct result of disease or substance.

1842. Suspiciousness is a characteristic feature of ?

- a) Paranoid personality disorder
- b) Schizoid personality disorder
- c) Schizotypal personality disorder
- d) Anankastic personality disorder

Correct Answer - A

Ans. is 'a' i.e., Paranoid personality disorder

Paranoid personality disorder

- It is characterized by generalised mistrust and Suspiciousness about the motives and actions of others and a tendency to interpret them as malevolent. The patient believes that :-
 1. Others are exploiting or deceiving the person.
 2. Friends are untrustworthy and not loyal.
 3. The spouse/partner is unfaithful.
 4. There is hidden meaning in neutral or friendly remarks.
 5. Many patients have feeling of self-importance and think they are unusually talented

1843. Borderline personality disorder ?

- a) Chronic feeling of emptiness
- b) Unstable interpersonal relationship
- c) Grandiosity
- d) Low self esteem

Correct Answer - B

Ans. is 'b' i.e., Unstable interpersonal relationship

Borderline personality disorder

- The central feature of borderline personality disorder is a pervasive pattern of unstable and intense interpersonal relationship, self perception and mood.
- The patient make recurrent suicidal threats and gesture and a small proportion of patients carry out the act or self mutilation like cutting or burning.
- The patients have difficulty in controlling their anger and impulsivity. There is uncertainty about personal identity.

1844. Personality associated bipolar disorder

-

a) Antisocial

b) Anakastic

c) Borderline

d) Narcissistic

Correct Answer - D

Ans. is 'd' i.e., Narcissistic

Symptoms of Narcissistic personality disorder can be confused with manic phase of bipolar disorder".

Narcissistic personality disorder

- Narcissistic patients are grandiose and require admiration from other.
- This is characterized by Ideas of grandiosity & inflated sense of self importance; lack of empathy with others; attention seeking behavior; exploitation of others; and an arrogant, haughty attitude.

1845. OCD is associated with which personality?

a) Anankastic

b) Borderline

c) Narcissistic

d) Histrionic

Correct Answer - A

Ans. is 'a' i.e., Anankastic

- Obsessive-Compulsive (anankastic) personality disorder : - People with obsessive-compulsive personality disorder are markedly preoccupied with orderliness, perfectionism, and control. They lack flexibility or openness. Their preoccupations interfere with their efficiency despite their focus on tasks. They are often stingy as well as stubborn.

1846. Most effective treatment in borderline personality disorders?

a) Pharmacotherapy

b) Behaviour therapy

c) Combination of both pharmacotherapy and behavioural therapy

d) None

Correct Answer - B

Ans. is 'b' i.e., Behaviour therapy

- "Dialectical behavioral therapy (DBT), a type of cognitive behavioral therapy (CBT), has been developed specifically for the treatment of borderline personality disorder, and it appear to be the most effective treatment for this condition".

1847. 18 year old girl with circumscribed bald patch with no organic disease & no behavioural disorder has ?

a) Depression

b) Trichotillomania

c) OCD

d) Phobia

Correct Answer - B

Ans. is 'b' i.e., Trichotillomania

- As there is no organic or behavioral disorders, this girl is suffering with impulse control disorder of compulsive hair pulling, known as Trichotillomania.

Impulse control disorder

- These disorders are characterized by failure to resist an impulsive behavior that may be harmful to self or others. There may be a feeling of release of tension by doing the act and a feeling of guilt after the act is over. Important impulse control disorder are : -
 1. Pyromania (Pathological fire setting)
 2. Kleptomania (Pathological stealing)
 3. Trichotillomania (Compulsive hair pulling)
 4. Pathological gambling
 5. Intermittent explosive disorder
 6. Impulse control disorder not otherwise specified
- Oniomania (Compulsion to shop/buying)
- Internet compulsion (Internet addiction)
- Cellular or Mobile phone compulsion
- Compulsive sexual behavior (sexual addiction).

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1848. Trichotillomania?

- a) Irresistable desire to set fire
- b) Irresistable desire to steal things
- c) Compulsive hair pulling
- d) Pathological gambling

Correct Answer - C
Ans. is 'c' i.e., Compulsive hair pulling

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1849. Pyromania refers to an irresistible urge to ?

a) Set things on fire

b) Eat out of proportion

c) Sleep for long periods

d) None

Correct Answer - A

Ans. is 'a' i.e., Set things on fire

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1850. REM sleep is associated with all except ?

a) Dreams

b) Delta waves

c) Loss of muscle tone

d) Increased BP

Correct Answer - B

Ans. is 'b' i.e., Delta wave

Stages of Sleep

- Sleep is basically divided into two phases : ?
- Non-REM (NREM) or slow-wave sleep : - It is called Non-REM sleep because no rapid eye movement (REM) is there on electrooculogram, rather there is slow or quiescent eye movement. It is also referred as S-sleep (synchronized sleep) or quiet sleep or orthodox sleep because there diminished physiological functions and a low level of overall activity. It is further divided into : ?
 1. Stage 1 : - It is a transition from wakefulness to sleep and is characterized by disappearance of alpha activity and appearance of theta activity. There is slow eye movements.
 2. Stage 2 : - It is characterized by typical EEG activity i.e., Sleep spindles and IC-complex'. No eye movement occurs.
 3. Stage 3 & 4 : - Stage 3 & 4 are stages of deep sleep. These are also called slow wave sleep as these stages are characterized by slow delta waves. Delta wave appearance starts in stage 3 and dominated in stage 4.
- REM sleep : - The REM sleep is so named as there is rapid roving movements of eye, i.e., rapid eye movement (REM) on electro-oculogram. It is also called paradoxical sleep because there is a

paradoxical elevation of brain activity & metabolism and physiological activity. The high-amplitude slow waves seen in stage 3,4 of REM sleep is replaced by rapid low voltage activity (beta wave). Features of REM sleep are : -

1. EEG Beta wave, Reappearance of alpha wave, Saw-tooth wave (low voltage fast activity), Pontogenital-occipital spikes.
2. Dreaming
3. Other features : - Generalized muscular atony, Penile erection, autonomic hyperactivity (Increased pulse rate & BP) and intermittent movement of small muscle groups.

1851. Sleep walking is seen in which stage of sleep ?

a) REM

b) Stage 1-2 NREM

c) Stage 2-3 NREM

d) Stage 3-4 NREM

Correct Answer - D

Ans. is 'd' i.e., Stage 3-4 NREM

Important events occurring during sleep

- Deep sleep/slow wave sleep disorder :- These events occur during stage 3 & 4 of NREM. Important disorders are : ?
 1. Somnambulism (Night walking) :- Patient walks during sleep.
 2. Sleep terror or night terrors (pavor nocturnes) :- The patient suddenly gets up screaming, with autonomic arousal (tachycardia, sweating). Sleep terrors are rarely remembered in the morning (in contrast to night mares). No treatment is required only reassurance is required. However, in severe cases benzodiazepine can be used.
 3. Sleep-related enuresis (Nocturnal enuresis/bed wetting) :- Repetitive voiding occurs during sleep. First line of treatment is behaviour therapy. If behavioral therapy fails, desmopressin (DOC) and Imipramine can be used.
 4. Bruxism (Teeth grinding)
 5. Sleep-talking (Somniloquy).
- **REM sleep events**
 1. Nocturnal penile tumescence :- It is spontaneous occurrence of an erection of the penis during sleep. It is a normal phenomenon and occurs for 80-120 minutes per night Nocturnal penile tumescence can be used to differentiate between psychogenic impotence and

- organic impotence as nocturnal penile tumescence is preserved in psychogenic impotence but not in organic cause of impotence.
2. Night mares (dream anxiety disorder) : - They are characterized by fearful dreams occurring in the last one third of night sleep. The person wakes up frightened and remembers the dream vividly (in contrast to night terror).
 3. Narcolepsy : - This is characterized by excessive day time sleep, often disturbed night time sleep and disturbances in the REM sleep. Age of onset is between 10-20 years. There is irresistible desire to sleep and bouts of sudden sleep each lasting for 10-30 minutes occurring during day time. In majority of cases narcolepsy is associated with one or more accessory symptoms : ?
 - Cataplexy : - It is the most common accessory symptom and is characterized by sudden decrease in muscle tone either, local or generalized.
 - Hypnagogic hallucination : - Hallucination occurring just before falling asleep . When hallucination occurs just before awakening it is called hypnopompic hallucinations.
 - Sleep paralysis (least common)
- Treatment of narcolepsy include stimulant medications (methylphenidate, amphetamines) or modafinil.

1852. Bruxism is seen in ?

a) NREM stage 1,2

b) NREM stage 3,4

c) REM

d) Any of the above

Correct Answer - B

Ans. is 'b' i.e., NREM stage 3, 4

- Slow wave sleep (stage 3 & 4 of NREM sleep) disorders :- Sleep walking (somnambulism), night terror (sleep terror or pavor nocturnus), Nocturnal enuresis, Bruxism (teeth grinding), and sleep talking (somniloquy).
- REM sleep events/disorder :- Nightmares, nocturnal penile tumescence, Narcolepsy.

1853. Child wakes up at night sweating and terrified does not remember the episode-diagnosis?

a) Narcolepsy

b) Nightmares

c) Night terrors

d) Somnambulism

Correct Answer - C

Ans. is 'c' i.e., Night terrors

- Sleep terror or night terrors (pavor nocturnus) : - The patient suddenly gets up screaming, with autonomic arousal (tachycardia, sweating). Sleep terrors are rarely remembered in the morning (in contrast to night mares). *No treatment* is required only reassurance is required. However, in severe cases benzodiazepine can be used.

1854. Alpha waves in EEG represent ?

- a) Eye closed with active mind
- b) Eye open, fully awake and alert
- c) Deep sleep
- d) None

Correct Answer - A

Ans. is 'a' i.e., Eye closed with active mind

EEG rhythms and sleep wake cycle

- Following EEG rhythms (Berger's rhythm) are important in relation to sleep wake cycle : ?
- .. Alpha rhythm : - In adult humans who are awake but at rest with mind wandering and the eye closed, alpha rhythm is prominent. It is a regular rhythm with a frequency of 8-13 Hz and amplitude of 50-100 μ V. It is most marked in parietal and occipital lobe. It is associated with decreased level of attention, i.e., person is awake but has decreased attention (relaxed) -> Person is thinking but with decreased attention (subconscious thinking).
- 2. Beta rhythm : - When attention is focused on something, the alpha rhythm is replaced by Beta rhythm. It is an irregular 13-30 Hz low voltage activity. It is most evident on frontal lobe and occurs when patient is fully awake and alert. Therefore this replacement of beta rhythm for alpha rhythm is called arousal or alerting response or alpha block. This phenomenon can be produced by any form of sensory stimulation or mental concentration such as solving arithmetic problems. Person is thinking with a maximum concentration Conscious thinking.
- 3. Theta rhythm (4 - 7 Hz) : - When person with alpha rhythm becomes slightly more relaxed (as occurs when there is transition from

wakefulness to sleep, i.e., stage 1 of REM), alpha rhythm is replaced by theta rhythm. Thinking is present but with even less attentiveness than which was present in alpha rhythm stage (Deep subconscious thinking). Two types of theta rhythm have been described : -

- Hippocampal (occurs in mammals other than men, i.e., cat dogs, etc).
 - Cortical (occurs in men)
4. Delta rhythm (3-5 Hz) : - It is present when the person is in deep sleep (NREM stage 3 & 4) and there is no thinking.

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1855. Flooding is a treatment modality used in ?

a) Phobia

b) Depression

c) Mania

d) Schizophrenia

Correct Answer - A
Ans. is 'a' i.e., Phobia

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1856. Psychosurgery is used in ?

a) Phobia

b) Generalized anxiety

c) OCD

d) Depression

Correct Answer - C
Ans. is 'c' i.e., OCD

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1857. Patient and Psychotherapis, both participate actively in?

a) Psychoanalysis

b) Psychoanalytic psychotherapy

c) Psycodynamic psychotherapy

d) All of the above

Correct Answer - B

Ans. B. Psychoanalytic psychotherapy

Psychoanalytic (psychodynamic) psychotherapy is a much more direct form of psychoanalysis.

The patient and therapist sit face to face.

However therapist usually talks quite a lot, compared to silence in psychoanalysis.

Treatment is an interactive process between the patient and therapist.

1858. Indications for ECT are all except ?

a) Severe depression with suicidal risk

b) Catatonic schizophrenia

c) Severe psychosis

d) Sever manic attack

Correct Answer - D

Ans. is 'd' i.e., Sever manic attack

Indications of ECT

- Severe depression with suicidal risk or with psychotic features or with stupor.
- Some types of schizophrenia (catatonic or paranoid)
- Schizophrenic or depressive stupor
- Severe catatonia with stupor
- Severe psychoses (schizophrenia or mania) with risk of suicide or homicide or physical assault.

1859. What is contraindication for ECT ?

a) Arrhythmia

b) Epilepsy

c) HIV

d) Cerebral aneurysm

Correct Answer - D

Ans. is 'd' i.e., Cerebral aneurysm

Contraindications of ECT

- Absolute : - Increased intracranial tension. cerebrovascular response to ECT include marked increased in cerebral blood flow and blood flow velocity. Cerebral oxygen consumption increases as well. The rapid increase in systemic blood pressure may transiently overwhelm cerebral autoregulation and may result in increased in intracranial pressure. Therefore, the use of ECT is prohibited in patients with known space occupying lesion (brain tumor) or head injury, cerebral (intracranial) aneurysm.
- Relative : - Recent myocardial infarction, severe hypertension, cerebrovascular accident, severe pulmonary disease, Retinal detachment, Pheochromocytoma.

1860. ECT is contraindicated in -

a) Very ill patients

b) Raised ICT

c) Heart disease

d) Pregnancy

Correct Answer - B
Ans. is 'b' i.e., Raised ICT

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1861. Repressed information can be brought into conscious mind by all except ?

a) Dream

b) Focused attention

c) Hypnosis

d) Somatic stimulation

Correct Answer - B

Ans. is 'b' i.e., Focused attention

- Preconscious thoughts are readily accessible to consciousness by focused attention, but not unconscious thoughts which contains repressed memory.
- Freud advanced the 'topographic theory of mind' in the year 1900 in the book 'the interpretation of dreams'. It divides the mind into three divisions :?
 1. Unconscious : - A traumatic event which had occurred during childhood are "repressed" (forced down) into deeper layer of unconsciousness where they lie dormant without producing any symptoms.
 2. Preconscious : - This is the region of mind between the unconscious and the conscious, with access to both. The unconscious mental contents can reach the conscious only through the preconscious. So, It acts as a sensor of conscious to maintain repressive barrier for unconscious mental contents.
 3. Conscious : It refers to attention concerned with registration of stimuli from both with and without.
- Focused attention can bring preconscious thoughts to consciousness. But repressed memory is in unconscious.
- Methods used to recover repressed thoughts are :-

1. Hypnosis
2. Dream interpretation
3. Automatic writing
4. Somatic stimulation
5. EMDR (eye movement desensitization and reprocessing)

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1862. Pagophagia involves eating ?

a) Ice

b) Sand

c) Clay

d) Salt

Correct Answer - A

Ans. is 'a' i.e., Ice

Geophagia	Eating clay
Pagophagia	Eating ice
Plumbophagia	Eating lead
Amylophagia	Eating starch
Coprophagia	Eating feces
Cautopyreiophagia	Eating burnt matches
Trichophagia	Eating hair
Lithophagia	Eating stones
Geomelophagia	Eating raw potatoes

1863. All are used in treatment of nocturnal enuresis except ?

- a) Imipramine
- b) Alarm setup
- c) Voiding of urine before sleeping
- d) Maintenance of calendar of day night wetting

Correct Answer - D

Ans. is 'd' i.e Maintenance of calendar of day night wetting

- All are used.
- **Treatment of nocturnal enuresis**
- It consists of :?
 1. Appropriate toilet training and restricting fluid at night. Encouraging the child to empty their bladder before bed.
 2. Alarm therapy
 3. Behavioral therapy using "bell and pad apparatus"
 4. Motivational therapy
- If non-pharmacological treatment fails -4 Imipramine is the drug of choice. Other drugs used are oxybutynin and desmopressin.
- Record keeping is helpful in determining a baseline and following the child's progress and may itself be a reinforcer. A star chart may be particularly helpful.

1864. All of the following are used to improve attention deficit in children except ?

a) Cognitive enhancement therapy

b) Cognitive behavioural therapy

c) Cognitive remediation therapy

d) Flooding

Correct Answer - D

Ans. is 'd. i.e., Flooding

- In attention deficit following can be used :
 1. Cognitive enhancement therapy (also called cognitive remediation therapy)
 2. Cognitive behavioral therapy
 3. Clinical behavior therapy
 4. Direct contingency management
 5. Intensive, packaged behavioral treatment

1865. Pavlov's experiment is an example of which of the following learning theory?

a) Modeling

b) Classical conditioning

c) Operant conditioning

d) Learned helplessness

Correct Answer - B

Pavlov's experiment is an example of Classical conditioning.

Classical conditioning is a process of learning, by which a previously neutral stimulus elicit an identical or similar response to one originally elicited by another stimulus as a result of pairing of the two stimuli.

Ref: Kaplan & Sadock's Comprehensive Textbook of Psychiatry, 9th edition, page 647. Beginning Psychology By Malcolm Hardy, 5th edition page 54 ; Universal Principles of Design By William Lidwell, page 174 ; Psychology: Concepts and Applications By Jeffrey S. Nevid, 3rd edition page 176.

1866. Father of modern psychiatry is ?

a) Bleuler

b) Freud

c) Pinel

d) Kraepelin

Correct Answer - C

Ans. is 'c' i.e., Pinel

- Father of psychoanalysis → Sigmund Freud
- Father of modern psychiatry → Philippe Pinel

1867. Oedipus complex is related to which phase of psychosexual development ?

a) Oral

b) Anal

c) Genital

d) Phallic

Correct Answer - D
Ans. is `d' i.e., Phallic

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1868. Concrete thinking stage of cognitive development?

a) 0-2 years

b) 2-5 years

c) 5-10 years

d) 10-15 years

Correct Answer - C

Ans. is 'c' i.e., 5-10 years

Cognitive development stages

- Children are not little adults. Until they reach the age of 15 or so they are not capable of reasoning as an adult. Jean Piaget described four major stages of intellectual (cognitive) development which are related to major development in brain growth.
 1. Sensori-motor stage (birth 2 years)
 2. Pre-operational stage (2-7 years)
 3. Concrete operational stage (7-11 years)
 4. Formal operational stage (>11 years)

1869. All are features of Korsakoff syndrome except

a) Antegrade amnesia

b) Retrograde amnesia

c) Ataxia

d) Confabulation

Correct Answer - C

Ans. 'C' i.e., Ataxia

Korsakoff syndrome

- Korsakoff's syndrome is the chronic amnestic syndrome that follows Wernicke's encephalopathy, and the two syndromes are believed to be pathophysiologically related. Korsakoff's syndrome is characterized by severe and irreversible memory impairments and confabulation behaviour in the absence of intellectual decline or attention deficit. Important clinical features are:?
 - 1. Memory:- The Korsakoff syndrome is characterized by both antegrade (i.e., learning) and retrograde (i.e., a memory of past events) amnesia. Antegrade amnesia is severe with a lack of insight. Retrograde amnesia is not as severe. New learning and recent memory are impaired but remote memory is relatively preserved. Although remote memory is relatively preserved, the patient is unable to organize them in a temporal context and distort the relationship between facts and fill the remote memory gaps by confabulation. There is a profound deficit of explicit (conscious or declarative) type of long term memory, with little impairment of implicit (unconscious or non-declarative) type of long term memory.
 - 2. Personality:- Passive and malleable such that they display a lack of initiatives, interest, or concern and diminished spontaneity.

- 3. Other:- Perseveration, lack of motivation (amotivational syndrome), apathy, passivity.
- 4. General intelligence, language, and motor & perceptual skills are not impaired.

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1870. Read the following ECG. It demonstrates which of the following?



- a) SVT
- b) WPW syndrome
- c) Atrial fibrillation
- d) Ventricular fibrillation

Correct Answer - D

Ans: D. Ventricular fibrillation

The ECG is showing a very high heart rate, extremely irregular rhythm, absent P wave and fibrillatory baseline → ventricular fibrillation.

Ventricular fibrillation is when the heart quivers instead of pumping due to disorganized electrical activity in the ventricles. It is a type of cardiac arrhythmia. Ventricular fibrillation results in cardiac arrest with loss of consciousness and no pulse. This is followed by death in the absence of treatment.

invalid question id