

## 1. Which of the following statement(s) is/are FALSE about genitor-urinary anatomy?

- a) Superficial dorsal penile artery is a branch of bulbourethral artery
- b) Penile skin is supplied by superficial external pudendal artery
- c) Penis receives three venous drainage systems
- d) There are 5 urethral sphincters in children
- e) Nerve supply of penis includes pelvic splanchnic nerves

Correct Answer - A:D

**Ans. is 'a' i.e., Superficial dorsal penile artery is a branch of bulbo-urethral artery & 'd' i.e., There are 5 urethral sphincters in children**

### Vasculature & Innervation of penis

**A. Arterial supply: mainly by branches of the internal pudendal artery (branch of anterior division of the internal iliac artery).**

- Dorsal Arteries of penis supplying the fibrous tissue around corpora and skin of penis.
- Deep arteries of penis (cavernous artery or artery to crura of penis): they pierce the crura and run within the corpora cavernosa, thus supplying the erectile tissue.
- Artery of bulb of penis (Bulbo-urethral artery): supply posterior part of corpus spongiosum + Cowper's glands
- Superficial & Deep branches of external pudendal artery (branch of femoral artery): supply penile skin

**B. Venous drainage: The penis is drained by three venous systems: superficial, intermediate, and deep.**

- SUPERFICIAL veins: drains into the left saphenous vein. Veins from more superficial tissue may drain into the external superficial pudendal veins.
- INTERMEDIATE system contains the deep dorsal and circumflex veins, lying within and beneath Buck's fascia.  
**DEEP drainage system consists :**
  - . Crural veins
  - . Cavernosal veins
  - . The internal pudendal veins
- **C. Lymphatic drainage:**
  - Glans drain into the deep inguinal nodes.
  - From rest of the penis lymph drains into the superficial inguinal nodes.
- **D. Nerve supply**
  - a) Somatic supply:
    - Skin of the penis is supplied by pudendal nerve via dorsal nerve of penis and posterior scrotal nerve.
    - A small area on the dorsum of proximal penis (root) : ilioinguinal nerve.
    - The muscles, bulbocavernosus and ischio-cavernosus: perineal branch of pudendal nerve.
  - b) Parasympathetic : It is responsible for erection and is derived from pelvic splanchnic nerves (S2S3S4).
  - c) Sympathetic : It is responsible for ejaculation (initial part) and is derived from L1 segment via superior and inferior hypogastric plexus.

## 2. 4th Aortic arch is responsible for the formation of?

a) Arch of aorta

b) Pulmonary artery

c) Pulmonary vein

d) Subclavian artery

e) Subclavian vein

Correct Answer - A:D

**Ans. is 'a' i.e., Arch of aorta & 'd' i.e., Subclavian artery**

**Aortic arch IV : The right and left side develop differently :**

- . Left aortic arch IV forms part of arch of aorta which lies between left common carotid and left subclavian arteries.
- . Right aortic arch IV forms most proximal part of right subclavian artery (distal part is formed by right dorsal aorta and right 7th cervical intersegmental artery). The left subclavian artery is formed by left 7th cervical intersegmental artery.
- . Pulmonary artery -5th aortic arch
- . Pulmonary vein - pulmonary veins develop independently (during the formation of septum primum).
- . Subclavian vein - Subclavian veins are formed by 7<sup>th</sup> cervical intersegmental vein

### 3. All are true regarding renal anatomy EXCEPT?

a) Left kidney is related to both 11th & 12th ribs

b) Long axis is lateral and upwards

c) Supplied by anterior segmental artery

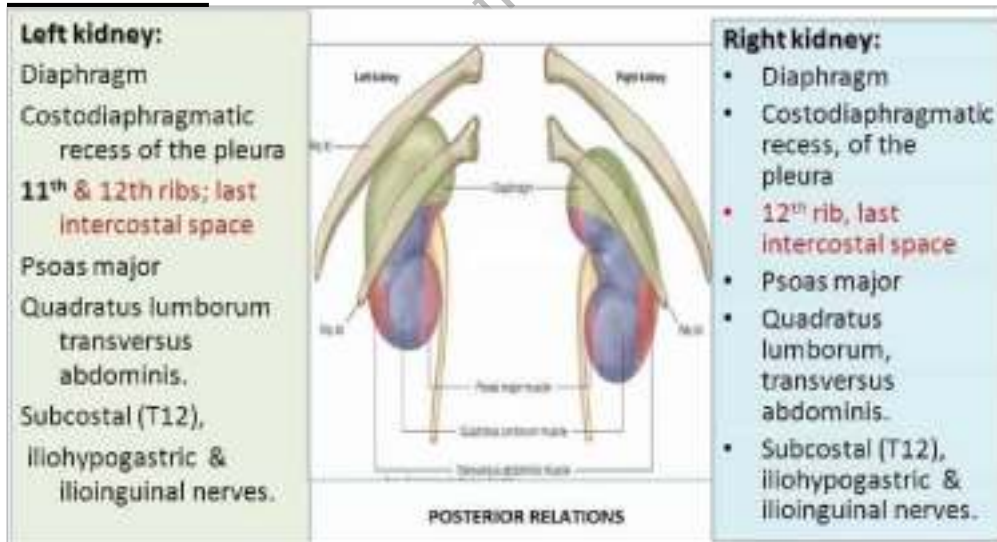
d) Supplied by rectal plexus

e) Both kidneys move in opposite direction during respiration

Correct Answer - B:D:E

Ans. is 'b' i.e., Long axis is lateral and upwards, 'd' i.e., Supplied by rectal plexus & 'e' i.e., Both kidneys move in opposite direction during respiration

#### LOCATION



#### Arterial Supply:

- Each kidney is supplied by renal arteries, left and right, which branch from left & right phrenic artery which branch directly from

the abdominal aorta.

- **Posterior, apical, upper anterior, middle anterior and lower are 5 segments of vascular supply in each kidney**
- Kidneys receive approximately 20% of the cardiac output.
- **Renal artery** → **Segmental arteries** → **Interlobar arteries** (penetrate the renal capsule and extend through the renal columns between the renal pyramids)
- **Interlobar arteries supply** → **Arcuate arteries** (run through the boundary of the cortex and the medulla) → Interlobular arteries → Afferent arterioles (supply the glomeruli).
- **Branches of renal artery are end arteries.**
- **Right renal artery is longer and passes behind IVC.**
- **NERVE SUPPLY:**
- Kidney is supplied by **renal plexus**, an offshoot of **coeliac plexus**.

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#### 4. True statement regarding anatomy of nasolacrimal apparatus is/are?

- a) Nasolacrimal duct opens in inferior meatus
- b) There is upper & lower canaliculus
- c) Most people have common canaliculus
- d) Canaliculus is lined by Ciliary stratified columnar epithelium
- e) Nasolacrimal duct is fractured in most head and neck injuries

Correct Answer - A:B:C:E

**Ans. is 'a' i.e., Nasolacrimal duct opens in inferior meatus, 'b' i.e., There is upper & lower canaliculus, 'c' i.e., Most people have common canaliculus & 'e' i.e., Nasolacrimal duct is fractured in most head and neck injuries**

**Nasolacrimal (drainage) apparatus consists of:**

- Lacrimal canaliculi
- Lacrimal sac
- Nasolacrimal duct

##### **Lacrimal canaliculi**

- There are two lacrimal canaliculi - superior and inferior on each side.
- They unite to form a common canaliculus and drain via the sinus of Maier into the lacrimal sac posterior to the medial palpebral ligament and anterior to the orbicularis oculi muscle.
- It is lined by stratified squamous epithelium supported by elastic tissue.

##### **Lacrimal sac:**

- The lacrimal sac lies in the lacrimal fossa on the inferomedial aspect of the bony orbit between the posterior and anterior lacrimal crests.

- The sac receives the lacrimal canaliculi before it drains via the valve of Krause into the nasolacrimal duct.

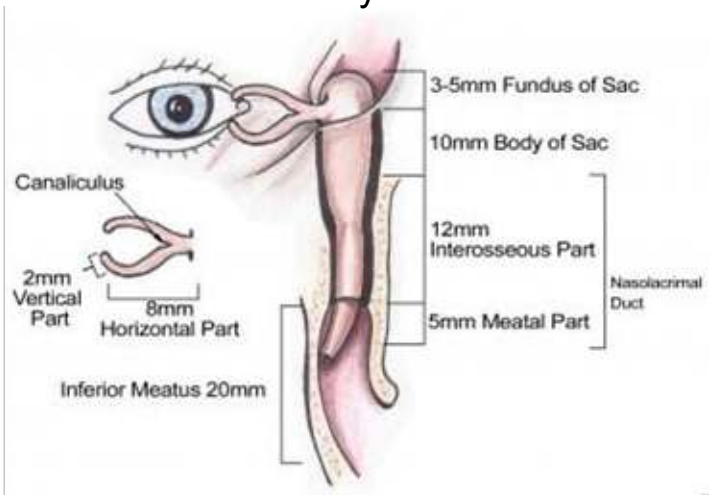
### **Nasolacrimal duct**

- The nasolacrimal duct is the inferior continuation of the lacrimal sac

#### **2 parts:**

· intraosseous part (12 mm): lies within the nasolacrimal canal of the maxilla

· membranous part (3-5 mm): runs in the nasal mucosa; terminates below the inferior nasal meatus as a slit-like opening where it is covered by a mucosal fold called the valve of Hasner



## 5. Posterior interosseous nerve supplies?

a) Extensor carpi radialis longus

b) Extensor carpi radialis brevis

c) Extensor carpi ulnaris

d) Brachioradialis

e) Extensor pollicis longus

Correct Answer - B:C:E

**Ans. is 'b' i.e., Extensor carpi radialis brevis, 'c' i.e., Extensor carpi ulnaris & 'e' i.e., Extensor pollicis longus**

- The posterior interosseous nerve is a pure motor nerve and innervates supinator & extensor carpi radialis.

**It supplies:?**

- . Extensor carpi ulnaris
- . Extensor digitorum
- . Extensor digiti minimi
- . Abductor pollicis longus
- . Extensor pollicis longus and brevis
- . Extensor indicis



## 6. Cavernous sinus receives blood from?

a) Superior ophthalmic vein

b) Superior petrosal sinus

c) Inferior petrosal sinus

d) Spheno-parietal sinus

e) Basilar plexus ofveins

Correct Answer - A:D

**Ans. is 'a' i.e., Superior ophthalmic vein & 'd' i.e., Spheno-parietal sinus**

**Tributaries (incoming channels) of cavernous sinus**

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

## 7. Inner Waldayer's ring includes?

a) Jugulo-diagastric nodes

b) Jugulo-omohoid nodes

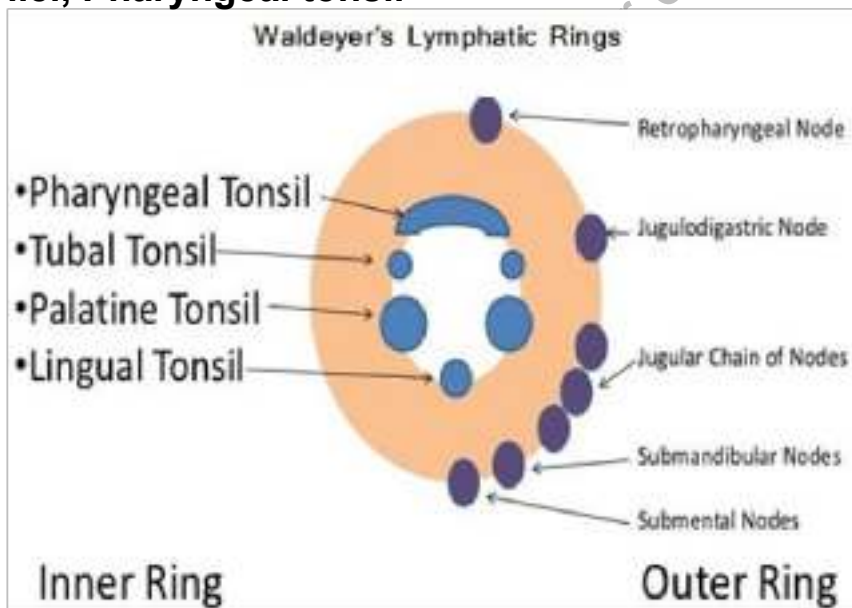
c) Palatine tonsil

d) Tubal tonsil

e) Pharyngeal tonsil

Correct Answer - C:D:E

Ans. is 'c' i.e., Palatine tonsil, 'd' i.e., Tubal tonsil & 'e' i.e., Pharyngeal tonsil



## 8. Structure(s) passing through aortic opening into the chest include?

a) Thoracic duct

b) Azygous vein

c) Hemiazygous vein

d) Esophagus

e) Inferior vena cava

Correct Answer - A:B

**Ans. is 'a' i.e., Thoracic duct & 'b' i.e. Azygous vein**

- The **aortic hiatus** is a hole in the diaphragm. It is the lowest and most posterior of the large apertures.
- It is located approximately at the level of the twelfth thoracic vertebra (T12).
- Through it passes the aorta, the azygos vein, the thoracic duct, and hemi-azygos vein passes through the left crus.

## 9. Constituents of Rotator cuff includes all EXCEPT?

a) Teres major

b) Teres minor

c) Supraspinatus

d) Infraspinatus

e) Subscapularis

Correct Answer - A

**Ans.is 'a' i.e., Teres major**

**Each one of these muscles is part of the rotator cuff and plays an important role:**

- **Supraspinatus.** This holds your humerus in place and keeps your upper arm stable. And helps lift your arm.
- **Infraspinatus.** This is the main muscle that lets you rotate and extend your shoulder.
- **Teres Minor.** This is the smallest rotator cuff muscle. Its main job is to assist with rotation of the arm away from the body.
- **Subscapularis.** This holds your upper arm bone to your shoulder blade and helps you rotate your arm, hold it straight out and lower it.



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## 10. Not TRUE statement regarding parotid gland is/are?

- a) Deep lobe contains deep lymphatics
- b) Divided into superficial and deep lobes by facial nerve
- c) Parotid duct opens opposite to the second upper molar
- d) Ectodermal in origin
- e) Auriculotemporal nerve is the main sensory nerve

Correct Answer - A

**Ans. is 'a' i.e., Deep lobe contains deep lymphatics**

**Development:**

- Parotid gland is the first salivary gland to appear, in early 6<sup>th</sup> week.
- It is ectodermal in origin and develops from the buccal epithelium just lateral to the angle of mouth

**Structures emerging from parotid**

**The following structures emerge from the parotid gland:**

**Anterior border:**

- Parotid duct

**3 Terminal branches of facial nerve:**

- The zygomatic and buccal branches: toward the temporal region, eyelids and cheek, respectively.
- Mandibular branch : Run along the body of the mandible towards the mouth

**Apex:**

- 5<sup>th</sup> terminal branch of facial nerve: Cervical branch continues into the neck (to platysma).
- Anterior & posterior divisions of retromandibular vein

**Posterior border:**

- Posterior auricular nerve
- Posterior auricular artery
- Posterior auricular vein

**Along base:**

- superficial temporal artery
- temporal branch of facial nerve
- Auriculotemporal nerve

**STRUCTURES WITHIN GLAND:**

**Arteries:**

- External carotid artery enters through posteromedial surface
- Maxillary artery
- Superficial temporal vessel
- Posterior auricular artery

**Veins:**

- The retromandibular veins
  - Facial Nerve
  - Parotid Duct (Stenson's duct)
- The duct turns opens into the vestibule of the mouth (gingivo- buccal vestibule) opposite the crown of the upper 2<sup>nd</sup> molar tooth

**Nerve supply:**

- **PARASYMPATHETIC:** auriculo temporal nerve
- **SYMPHETIC SUPPLY-** plexus around the external carotid artery.
- **SENSORY NERVES:** auriculotemporal nerve, except for parotid fascia & overlying skin which are innervated by **Great auricular nerve (C2, C3).**

## 11. External anal sphincter is innervated by?

a) S2,S3,S4

b) S2, S3

c) S1,S2

d) L5,S1

e) L2,L3

Correct Answer - A

**Ans. is a i.e., S2, S3, S4**

**Anal Sphincters :**

Two sphincters, internal and external, surround the anal canal:

**A. Internal sphincter (sphincter ani internus):**

- Involuntary
- Sympathetic fibers through superior hypogastric plexus a
- Parasympathetic fibers from pelvic splanchnic nerves (S2 S3 S4).

**B. External sphincter (sphincter ani externus)**

- Voluntary
- Surrounds the entire length of anal canal
- Inferior rectal nerve (S2 S3 S4) and perineal branch



**12. A patient had a lesion in the wrist. On examination the thumb was laterally rotated & adducted, with ape thumb deformity. Which is the nerve involved?**

a) Median

b) Ulnar

c) Radial

d) Post interosseous nerve

e) None

Correct Answer - A

**Ans. is 'a' i.e., Median**

**Ape thumb (Simian thumb) deformity : -**

- The Ape Hand Deformity is caused by damage to the distal median nerve (also called a Median Claw lesion), and subsequent loss of opponens pollicis muscle function.
- The thumb is adducted and laterally rotated so that the thumb lies in the same plane as the other fingers. It is due to over action of adductor pollicis (supplied by ulnar nerve).

### 13. Spring ligament refers to?

a) Plantar calcaneonavicular ligament

b) Short planter ligament

c) Long planter ligament

d) Both 'b' & 'c'

e) None

Correct Answer - A

**Ans. is 'a' i.e., Plantar calcaneonavicular ligament**

The spring ligament (Plantar calcaneonavicular ligament) is a group of ligaments which connect calcaneum to navicular.

**It consists of :?**

- Superomedial ligament.
- Mediolplantar oblique ligament (medial or intermedialcalcaneonavicular ligament).
- Inferoplantar longitudinal ligament (Lateral calcaneonavicular ligament).

## 14. Which of the following is NOT a content of medial wall of middle ear?

a) Oval window

b) Round window

c) Processus cochleariformis

d) Aditus & antrum

e) Notch of Rivinus

Correct Answer - D:E

**Ans. is 'd' i.e., Aditus & antrum & 'e' i.e., Notch of Rivinus Medial or inner labyrinthic wall of middle ear (Pariet labyrinthica):**

- It is formed by the lateral wall of labyrinth.
- **It presents following structures:**
  - Promontory: It is a bony bulge which is due to the basal coil of cochlea. Tympanic plexus present over it.
  - Oval window (fenestra vestibuli/ovalis):
    - The footplate of stapes
  - Round window (fenestra cochleae/rotunda): covered by the secondary tympanic membrane.
  - Horizontal tympanic part of fallopian canal for facial nerve
  - The tympanic segment of facial nerve canal
  - Lateral semicircular canal
  - Processus cochleariformis
- The tendon of tensor tympani takes a turn on this process and then is inserted on the neck of malleus.
- Processus cochleariformis is an important surgical landmark for the

level of the genu of the facial nerve.

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## 15. Pronator quadrates has same innervations as following muscles?

a) Flexor pollicis longus

b) Flexor digitorum superficialis

c) Palmaris longus

d) Flexor digitorum profundus of middle finger

e) Flexor carpi ulnaris

Correct Answer - A:B:C:D

**Ans. is 'a' i.e., Flexor pollicis longus, 'b' i.e., Flexor digitorum superficialis, 'c' i.e., Palmaris longus, 'd' i.e., Flexor digitorum profundus of middle finger**

All the flexor muscles of the forearm are supplied by median nerve, except the flexor carpi ulnaris and the medial half of flexor digitorum profundus to the ulnar two fingers (4<sup>th</sup> & 5<sup>th</sup> finger).

### **MEDIAN NERVE INNERVATIONS:**

- The median nerve innervates the majority of the muscles in the **anterior forearm**, and some **intrinsic hand** muscles.

#### **Anterior Forearm**

**Innervates muscles in the superficial and intermediate layers:**

- **Superficial layer:** Pronator teres, flexor carpi radialis and palmaris longus.
- **Intermediate layer:** Flexor digitorum superficialis.

**The median nerve also gives rise to the anterior interosseous nerve, which supplies the deep flexors:**

- **Deep layer:** Flexor pollicis longus, pronator quadratus, and the lateral half of the flexor digitorum profundus (the medial half of the

muscle is innervated by the ulnar nerve).

### **Hand**

The median nerve innervates some of the muscles in the hand via **two branches**.

- The **recurrent branch** :Thenar muscles
- The **palmar digital branch** : Innervates the lateral two lumbricals.

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## 16. Supination & pronation doesn't take place at?

a) Superior radioulnar joint

b) Middle radioulnar joint

c) Inferior radioulnar joint

d) Radiocarpal joint

e) Midcarpal joint

Correct Answer - D:E

**Ans. is 'd' i.e., Radiocarpal joint & 'e' i.e., Midcarpal joint**

Forearm rotation (supination/pronation) occurs at radio-ulnar joint complex i.e. Superior (proximal) radioulnar joint, Inferior (distal) radioulnar joint & Middle radioulnar joint .

**Movement: Muscles responsible for movements**  
**Supination**

- Supinator (when elbow is extended)
- Biceps brachii (when elbow is flexed)
- Brachioradialis (supinates the pronated forearm to midprone position)

**Pronation**

- Pronator teres (rapid pronator)
- Pronator quadratus (strong pronator)
- Brachioradialis (pronates the supinated forearm to midprone position)

17.

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**Occlusion occurs at 2nd part of axillary artery, blood flow is maintained by which of the following anastomosis?**

- a) Suprascapular artery & post circumflex humeral artery
- b) Anterior and posterior circumflex humeral artery
- c) Circumflex scapular and posterior circumflex humeral artery
- d) Deep branch of the transverse cervical artery and subscapular artery
- e) Anterior circumflex artery and subscapular artery

Correct Answer - A:D

**Ans. is 'a' i.e., Suprascapular artery & post circumflex humeral artery & 'd' i.e., Deep branch of the transverse cervical artery and subscapular artery**

- Anastomosis around scapula provides blood supply to distal part if first or second part of axillary artery is blocked.
- Anastomosis around scapula connects the first part of subclavian artery with third part of axillary artery.
- Anastomosis Around Scapula  
Connects 1st part of subclavian with 3rd part of axillary artery.
- **Around body of scapula**
  - . Suprascapular (branch of 1st part of subclavian).
  - . Deep branch of transverse cervical (branch of thyrocervical trunk from 1st part of subclavian).
  - . Circumflex scapular (branch of subscapular, branch of 3rd part of axillary).

**On the acromion process**

- . Acromial branch of thoracoacromial (branch of 2nd part of axillary).
  - . Ascending branch of posterior circumflex humeral (branch of 3rd part of axillary).
  - . Acromial branch of suprascapular (branch of 1st part of subclavian).
- 

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## 18. True regarding red pulp of spleen is/are?

- a) Periarteriolar lymphoid sheaths
- b) B-cell containing lymphoid follicles
- c) Perisinusoidal macrophages
- d) Composed of sinusoids and splenic cords
- e) Removal of old RBCs and modification of new cells

Correct Answer - C:D:E

**Ans. is 'c' i.e., Perisinusoidal macrophages, 'd' i.e., Composed of sinusoids and splenic cords & 'e' i.e., Removal of old RBCs and modification of new cells**

### **STRUCTURE OF SPLENIC PARENCHYMA**

- The spleen comprises many units of red pulp & white pulp, which are centred around central arterioles (smaller branches of splenic artery).
  - **Red pulp**
  - Red pulp contains large number of venous sinusoids draining into tributaries of splenic vein.
  - Venous sinusoids are lined by endothelial stave cells which form incomplete layer & present intracellular slits b/w them through which blood can percolate.
  - Surrounding the sinuses is the parenchyma, which contains lymphocytes, macrophages, plasma cells, etc.
  - It metabolizes senescent red blood cells (erythrocytes).
- Adjacent blood spaces contain blood cells and arranged in cords called splenic cords of Billroth (splenic cords of reticulin fibers).

## 19. True regarding HbA2 is/are?

a) It has more capacity to carry oxygen

b) Concentration is more than HbA

c) Level is increased in Thalasemia

d) Consists of 2 alpha and 2 beta chains

e) None of the above

Correct Answer - B

**Ans. is 'c' i.e., Level is increased in Thalasemia**

Ref: Ganong 23d/e p. 523-525 <https://www.aafp.org/alp/2009/0815/p339.html>

- "The hemoglobin electrophoresis with beta thalassemia trait usually has reduced or absent HbA, elevated levels of HbA2, and increased HbF.
- However, a normal concentration of HbA2 does not rule out beta thalassemia trait, especially if there was coexistent iron deficiency, which can lower HbA2 levels into the normal range."
- "Hemoglobin A2 may be increased in beta thalassemia or in people who are heterozygous for the beta thalassemia gene."

## 20. TRUE statement(s) regarding "loop of Henley" in kidney is/are?

a) Ascending limb actively absorbs Na

b) Ascending limb actively absorbs Cl

c) Ascending limb secretes water in lumen

d) Descending limb secretes water

e) Descending limb receives hyperosmolar fluid from PCT

Correct Answer - A:B

**Ans. is 'a' i.e., Ascending limb actively absorbs Na<sup>+</sup> & 'b' i.e. Ascending limb actively absorbs Cl-**

Ref: Ganong 25th/e P. 680-691; Essentials of medical physiology p. 271

### LOOP OF HENLE

- The loop of Henle has a thin descending, a thin ascending and a thick ascending segments.

#### REABSORPTION IN THIN ASCENDING LIMB:

- NaCl<sup>-</sup> reabsorption occurs -
- Due to high NaCl<sup>-</sup> permeability.
- Less permeable to water.
- Tubular fluid is iso-osmotic.

#### REABSORPTION IN THICK ASCENDING LIMB:

##### Sodium, Potassium & Chloride reabsorption:

- By "Secondary active transport" -
- Through Na<sup>2+</sup>-K<sup>+</sup>-2Cl<sup>-</sup> carrier transporter.
- Transports one Na<sup>2+</sup>, one K<sup>+</sup>, & two Cl<sup>-</sup>.
- Active sodium absorption occurs.

- 30% filtered  $\text{Na}^{2+}$  reabsorbed.
  - **Water reabsorption:**
  - **Totally impermeable to water.**
  - Ascending segment also referred “Diluting” segment:
  - Due to sodium & solute absorption without water.
  - Resulting in tubular fluid dilution.
  - **Tubular fluid is hypotonic.**
- 

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## 21. Antioxidant effects are shown by?

a) Vitamin C

b) Vitamin E

c) Selenium

d) Zinc

e) Vitamin B

Correct Answer - A:B:C:D

**Ans. is 'a' i.e., Vitamin C, 'b' i.e. Vitamin E, 'c' i.e., Selenium & 'd', Zinc**

Ref Harper's 30th/e p. 565; Robbins's th/e p. 66-67, <http://www.rroij.com>

### **Naturally occurring antioxidants:**

- Alkaloids and related compounds
- Amino acids and peptide derivatives:- cysteine, tryptophan, melatonin, and tryptamine
- Vitamins: -Beta carotene, Vitamin A, Vitamin C, Vitamin E (tocopherol)
- Minerals:- selenium, zinc
- Enzymes :- catalase, superoxide dismutase (SOD), and glutathione peroxidase
- Flavonoids & Isoflavonoids: Chalcones and catechins
- Carnosine
- Chlorogenic & melanic acids
- Curcumin and derivatives
- Ergothioneine
- Free phenolic acids
- Hydroquinones and quinones

- Lignans
  - Lipoic acid
  - Lycopene
  - Tetrapyrroles
  - Uric acid and other ourines
- 

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## 22. Right combination of sensory receptor and sensation carried by them includes?

- a) Krouse's bulb - pressure
- b) Pacinian corpuscles - vibration
- c) Meissner's corpuscles - pressure
- d) Ruffini's end organs - pressure
- e) Merkel's disc - cold temperature

Correct Answer - B:D

**Ans. is 'b' i.e., Pacinian corpuscles - vibration & 'd' i.e. Ruffini's end organs pressure**

[Ref: Guyton 12th/e p. 560 table G6.1); Principles of medical physiology p. 647, 648

**Tactile (Touch) receptor:**

- Whether a tactile receptor senses pressure or vibration depends on whether receptor is fastly adapting or slowly adapting.
- Touch, pressure, & vibration are different forms of same sensation.
- Pressure is felt when force applied on skin is sufficient to reach deep receptors.
- Touch is felt when force is insufficient to reach deep receptors.
- Hence, detected by superficial receptors (Merkel's disc & Meissner's corpuscle).
- Vibrations are rhythmic variations in pressure.
- I.e. Rhythmic variations of force that reaches deep receptors.

**Divisions:**

**2a. Slowly adapting:**

- Examples include, "One each from superficial & deep cutaneous

receptors"

- **Ruffini's end organ -**
- **Meant to detect sustained pressure.**
- **Useless for vibrations.**
- **Merkel's disk -**
- **Detect two-point discrimination.**
- **2b. Rapidly adapting:**
- **Examples,**
- **"One each from superficial & deep cutaneous receptors"**
- **Pacinian corpuscle -**
- **Stops discharge in response to sustained pressure.**
- **Useful to detect vibrations - i.e., when pressure fluctuates rapidly.**
- **Meissner's corpuscle -**
- **Detect surface texture.**
- **Hence, Higher the rate of receptor adaptation → Greater is detectable vibration frequency.**

**3. Based on type of tactile sensations detected:**

**3a. Superficial sensations:**

- **Generally touch**
- **By Meissner's corpuscle (detect surface texture i.e. rough or smooth)**
- **By Merkel's disc (detect two-point discrimination).**

**3b. Deep sensations:**

- **Pressure (Deep touch) - Detected by Ruffini organ.**
- **Vibrations - Detected by Pacinian corpuscle.**

**SUMMARY:**

**1. Superficial cutaneous receptors:**

- **Detect touch (Superficial sensation)**
- **Merkel's disk - Slowly adapting & detect two-point discrimination.**
- **Meissner's corpuscle - Rapidly adapting & detect surface texture.**

**2. Deep cutaneous receptors:**

- **Detect deep touch, pressure, & Vibration.**
- **Ruffini's end organ - Slowly adapting & detect sustained pressure/deep touch.**
- **Pacinian corpuscle - Rapidly adapting & detect**

**vibrations** (useful only when pressure fluctuates rapidly. i.e. during vibrations).

- Higher the rate of adaptation of receptor, the greater vibration frequency it can detect.
- 

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## 23. According to WHO, normal semen findings are?

a) Volume - 1.5 ml

b) Concentration - 15 million/ml

c) Progressive motility - > 40%

d) Normal morphology - > 10%

e) Ph - < 6.3

Correct Answer - A:B

**Ans. is'a'i.e., Volume - 1.5 ml &'b'i.e. Concentration - 15 million/ml** <https://www.institutobernabeu.com/foro/en/2014/02/17/seme-quality-parameters-according-to-the-world-health-organisation-who/>

- The World Health Organisation (WHO) has published several editions of the "Manual for the Examination of Human Semen and Sperm-Cervical Mucus Interaction", the last one in 2010.
- The concept of "Lower Reference Limit (LRL) was established in the last manual of the WHO.
- There are many parameters obtained through a spermiogram, the most frequently studied are:
- Volume: The normal volume of an ejaculate sample after 3 /5 days of sexual abstinence is 1.5ml approximately. Lower volumes might suggest hypospermia.
- Color: Sperm is usually opalescent white, slightly yellow. When the color is altered, it is recommended to study possible causes.
- pH: Value should be greater than T.I. Lower values might be a sign of azoospermia (lack of spermatozoa) or chronic inflammatory processes.

- Sperm concentration: Normal values are around 15 million per ml ejaculated or 39 million per complete semen sample. When these values are lower it could indicate Oligozoospermia.
- Motility: The percentage of motile spermatozoa and progressively motile is analyzed. The progressive motility value should be over 32%, on the contrary it might indicate Astenozoospermia.
- Vitality: The percentage of vital spermatozoa must be over 58%. Lower values could indicate Astenozoospermia.
- Morphology: There might be 4% or more normal spermatozoa in a usual spermogram. Lower percentages could indicate teratozoospermia.

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## 24. Normal value of hydrogen ions in human fluids is?

a) 35 meq/L

b) 40 meq/L

c) 45 meq/L

d) 50 meq/L

e) None of the above

Correct Answer - E

**Ans is 'e' i.e., None of the above**

- The normal hydrogen ion concentration of blood and other body fluids is quite low ( $<0.0001$  mEq/L) compared with the body fluid concentrations of other electrolytes.
- Because it is so low, hydrogen ion concentration is measured in pH units, calculated as the negative logarithm of the concentration in milliequivalents per liter.
- Normal pH ranges from 7.35 to 7.45 for arterial blood and from 7.31 to 7.41 for venous blood.

## 25. TRUE regarding hypoxemia is/are?

a) Decrease in ventilation

b) Decrease in delivery of oxygen to tissues

c) Inadequate utilization of oxygen by tissues despite normal delivery of oxygen

d) Decreased oxygen pressure in blood

e) All of the above

Correct Answer - A:D

**Ans is 'a' i.e., Decrease in ventilation & 'd' i.e. Decreased oxygen pressure in blood.**

[Ref: Ganong 25th/e p. 647 6 24/e p. 649; Principles of medical physiology p. 354, 355;

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC52341994>]

- Option b & c are related with hypoxia, not hypoxemia.
- **Hypoxemia and hypoxia:**
- The term hypoxia and hypoxemia are not synonymous.
- Hypoxemia is defined as a decrease in the partial pressure of oxygen in the blood whereas hypoxia is defined b! reduced level of tissue oxygenation.
- Hypoxia can be due to either defective delivery or defective utilization of oxygen by the tissues.
- Causes of hypoxemia
- The inspired air has reduced oxygen content (e.g., at high altitude or due to other causes).
- Insufficient gas exchange is caused by alveolar hypoventilation.

## 26. Iodine is transported to the thyroid gland by ?

a) Active transport

b) Diffusion

c) Passive transport

d) Pinocytosis

e) None

Correct Answer - A

**Ans. is 'a' i.e., Active transport [Ref: Ganongjs 24th/e p. 3411]**

**Iodine uptake for thyroid hormone synthesis:**

- Iodine uptake mediated by thyroid follicular cells from the blood plasma is the first step for the synthesis of thyroid hormones.
- This ingested iodine is bound to serum proteins, especially to albumins.
- The rest of the iodine which remains unlinked and free in bloodstream, is removed from the body through urine.
- Basolateral membrane of thyroid cells (follicular cells) have active transport system for iodine uptake -  $\text{Na}^+ : \text{I}^-$  symporter (NIS) (Secondary active transport).
- This trapping stimulated by TSH,



**27.** Which of the following are Pyrimidine bases?

a) Adenine and Guanine

b) Guanine and Cytosine

c) Cytosine and Adenine

d) Thymine and Cytosine

e) None

Correct Answer - D

**Ans: (D) Cytosine and Adenine**

In **DNA** and RNA, Pyrimidine bases form hydrogen bonds with their complementary purines.

Thus, in DNA, the **purines adenine (A) and guanine (G)** pair up with the **pyrimidines thymine (T) and cytosine (C)**, respectively. In **RNA**, the complement of adenine (A) is uracil (U) instead of thymine (T), so the pairs that form are **adenine: uracil and guanine: cytosine**.

- Two types of bases are found in nucleotides : (i) purines and (ii) pyrimidines.
- Purines : Two major purine bases found both in DNAs as well as RNAs are (i) adenine (A) and (ii) guanine (G).
- 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 <sup>Q</sup> and thymine is not found in RNAs.

**Ref:** Rodwell V.W. (2011). Chapter 32. Nucleotides. 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

**28. Major contribution towards gluconeogenesis is by?**

a) Lactate

b) Glycerol

c) Ketones

d) Alanine

e) None

Correct Answer - D  
D i.e. Alanine

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## 29. Which of the following will be more towards the negative pole in gel electrophoresis?

a) 5 bp

b) 50 kbp

c) 150 bp

d) 550 bp

e) 50000 bp

Correct Answer - B:E

**Ans. is 'b' i.e., 50 kbp & 'e' i.e. 50000 bp [Ref Various internet sites]**

- In gel electrophoresis, DNA molecules move towards positive end as they are negatively charged themselves.
- larger molecules (> 500 bp) move slowly as compared to smaller molecules. So, larger the molecule, it is more towards the negative end and vice versa .
- Polyacrylamide gels are usually used for proteins, and have very high resolving power for small fragments of DNA (5-500 bp). • Agarose gels on the other hand have lower resolving power for DNA but have greater range of separation, and are therefore used for DNA fragments of usually 50-20,000 bp in size, but resolution of over 6 Mb is possible with pulsed field gel electrophoresis (PFGE)" - wikipedia

### 30. Beta galactosidase deficiency causes?

a) Goucher disease

b) Krabbe's disease

c) Fabry's disease

d) Neimann Pick disease

e) Metachromatic leukodystrophy

Correct Answer - B

**Ans. is 'b' i.e., Krabbe's disease [Ref Harper 30<sup>th</sup>/e p. 251 & 29<sup>th</sup>ie p. 235]**

- Krabbe disease, also known as globoid cell leukodystrophy or galactosylceramide lipidosis, is an autosomal-recessive sphingolipidosis caused by deficient activity of the lysosomal hydrolase galactosylceramide beta-galactosidase (GALC).
- GALC degrades galactosylceramide, a major component of myelin, and other terminal beta-galactose-containing sphingolipids, including psychosine (galactosylsphingosine).
- Beta-galactosidase is a lysosomal enzyme responsible for catalyzing the hydrolysis of gangliosides. The deficiency of this enzyme can lead to 1 of the following conditions: GM1 gangliosidosis, Morquio syndrome B, and galactosialidosis.

### 31. Methods that can be used to see protein - protein interaction include?

- a) Fluorescence life imaging
- b) Fluorescence resonance energy transfer
- c) Fluorescence polarization
- d) Fluorescence complementation
- e) All of the above

Correct Answer - E

**Ans. is 'e' i.e., All of the above [Ref wiki]**

**Biochemical methods** →

- . Co-immunoprecipitation
- . Bimolecular fluorescence complementation (BiFC)

**Biophysical & theoretical methods** →

- . Bio-layer interferometry
- . Dual polarisation interferometry (DPI)
- . Fluorescence polarization/anisotropy
- . Fluorescence resonance energy transfer (FRET)
- . Fluorescence lifetime imaging microscopy (FLIM) .

## 32. Uncouplers of oxidative phosphorylation include?

a) 2, 4 - DNP

b) H<sub>2</sub>S

c) Cyanide

d) Thermogenin

e) Carboxin

Correct Answer - A:D

**Ans. is 'a' i.e., 2, 4 - DNP & 'd' i.e., Thermogenin [Ref Harper 30<sup>th</sup>ie p. 132 er 29<sup>th</sup>ie p. 339; Vasudevan 6<sup>th</sup>ie p. 234, 235; Chatterjea Shinde 7<sup>th</sup>ie p. 132; Lippincott Ole p. 79]**

- Uncouplers 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.  
**Uncouplers may be :?**
  - . Natural :- Thermogenin, thyroxine, long chain FAs
  - . Synthetic :- 2, 4-dinitrophenol (2, 4-DNP), 2, 4-dinitrocresol (2, 4-DNC), and CCCP.
- Thermogenin is an uncoupler protein present in mitochondria of brown adipose tissue (brown fat).
- It uncouples oxidation and phosphorylation by acting as a channel for H<sup>+</sup> ions so that hydrogen ion gradient cannot build up

### 33. Pyridoxine is required for?

a) Decarboxylation

b) Carboxylation

c) Transamination

d) Transsulfuration

e) Oxidative deamination

Correct Answer - A:C:D

**Ans. is 'a' i.e., Decarboxylation, 'c' i.e. Transamination & 'd' i.e. Transsulfuration [Ref Harper's 30<sup>m</sup>/e p. 557 & 29<sup>th</sup>/e p. 536, 537]**

- Transamination: PLP acts as coenzyme for transaminases.
- Decarboxylation: All decarboxylation reactions (by decarboxylases) require PLP. Thus PLP is involved in generation of important biogenic amines : GABA, Serotonin, Melatonin, Histamine and catecholamines (epinephrine, norepinephrine).
- In pyridoxin deficiency, 3-hydroxykinurenine accumulates and is converted to alternate metabolite xanthurenic acid (xanthurenate). Thus, xanthurenic acid (xanthurenate) excretion in urine is increased in pyridoxine deficiency. Thus pyridoxin may be used in xanthurenic aciduria.

### 34. Amino acids derived from tissues are directed towards?

a) Ammonia formation

b) Ammonium salts

c) Urea cycle

d) Urea formation

e) Amino acid pool of cells

Correct Answer - E

**Ans. is 'e' i.e., Amino acid pool of cells [Ref: Harper 30<sup>th</sup>/e p. 298; Nutrition by Paul Insel, Don Ross, Kimberley McMahon 4<sup>th</sup>/e p. 242]**

- When cells break protein, the protein's amino acids return to circulation. These available amino acids, found throughout the body tissues and fluids, are collectively referred to as amino acid pool. ▪ The available amino acids will be utilized for protein synthesis. Others may have their amino group removed and be used to produce energy or non protein substances such as glucose.



### 35. Co-factors required for fatty acid synthesis in human are?

a) ATP

b) NADPH

c) Biotin

d) Pyridoxine

e) Pantothenic acid

Correct Answer - A:B:C

**Ans. is 'a' i.e., ATP, 'b' i.e. NADPH & 'c' i.e., Biotin [Ref Harper 30<sup>th</sup> le p. 236 er 29<sup>th</sup>/e p. 219; Lippincott 4<sup>5</sup>/e p. 187]**

- pyridoxal phosphate is needed for elongation of already synthesized fatty acids, not for synthesis itself.
- Extramitochondrial (cytoplasmic) System is concerned with de novo synthesis of fatty acid from acetyl CoA, and is present in cytosol. Palmitic acid is synthesized.
- Cofactor requirements for fatty acid synthesis are NADPH, ATP, Mn<sup>2+</sup>, biotin and HCO<sub>3</sub><sup>-</sup> (as a source of CO<sub>2</sub>).
- The major product of fatty acids synthesis is palmitate. Longer fatty acids are formed by elongation reactions either in microsomes (endoplasmic reticulum or in mitochondria).

### 36. All are True statements regarding Okazaki fragment EXCEPT?

a) Requires DNA polymerase

b) Forms on leading strand

c) Forms on lagging strand

d) Requires helicase for opening

e) Requires RNA primer

Correct Answer - B

**Ans. is 'b' i.e., Forms on leading strand [Ref Lippincott's 5<sup>th</sup> ie p. 399, 401, 406; Harper's 30<sup>th</sup> ie p. 383 & 25<sup>0</sup> ie p. 367]**

- DNA polymerases responsible for copying the DNA templates are only able to "read" the parental nucleotide sequence in 3' - 5' direction, and they synthesize the new DNA strands only in 5' - 3' direction. Therefore, 2 newly synthesized chains must grow in opposite directions.
- The DNA chain which runs in the 3' to 5' direction towards replication fork as continued strand is called leading strand. This requires only one RNA primer
- The DNA chain which runs in the 5' to 3' direction away from the replication fork is called lagging strand. It is synthesized discontinuously and requires numerous RNA primers.
- As the replication fork moves, RNA primers are synthesized at specific intervals. **These RNA primers are extended by DNA polymerase III into short pieces of DNA called Okazaki fragments.**

### 37. All are true regarding satellite DNA EXCEPT?

a) Repeated DNA sequences in tandem

b) Clustered around centromere

c) Clustered around telomeres

d) Transcriptionally active

e) None of the above

Correct Answer - D

**Ans. is 'd' i.e., Transcriptionally active [Ref Harper's 30<sup>th</sup> e p. 377-78; Lippincot 4<sup>th</sup> e p. 461]**

- Repetitive sequences in DNAs also called (satellite DNA)
- These consist of 5-500 base pair lengths repeated many times.
- These are often clustered in centromeres (central protein of chromosomes where sister chromatids join each other) and telomeres (repeated sequence at the end of chromosomes).
- **The majority of these sequences are transcriptionally inactive** and play a structural role
- microsatellite sequences most commonly are found as dinucleotide repeats of AC on one strand and TG on the opposite strand.
- Microsatellite repeat sequences consist of 2-6 bp repeated upto 50 times. The AC repeat sequences occur at 50000-100000 locations in human genome.

### 38. True statement regarding t-RNA is?

a) Contains codon

b) Contains anti-codon

c) Contains blunt ends

d) Acts as a acceptor for amino acids in protein synthesis

e) Gets attached to ribosomes

Correct Answer - B:D:E

**Ans. is 'b' i.e., Contains anti-codon, 'd' i.e. Acts as a acceptor for amino acids in protein synthesis & 'e' i.e. Gets attached to ribosomes**

**[Rep Lippincotese le p. 418; Harper's 30'Ve p. 394]**

- tRNA is the Smallest of the three major RNAS having 73 to 93 nucleotide residues. It comprises about 15% of total RNA in the cell.
- **Acceptor arm consists of a base paired stem that terminates in the sequence CCA at the 3' end.** This is the attachment site for amino acids. CCA tail is added during post-transcriptional modification.
- **It contains anticodon that base pairs with the codon of coming mRNA.** Anticodon has nucleotide sequence complementary to the codon of mRNA and is responsible for the specificity of the t RNA.
- **Through TC arm tRNA gets attached to ribosome.**

### 39. Vitamin E deficiency in adult causes?

a) Hemolysis

b) Posterior column Involvement

c) Peripheral neuropathy

d) Hair loss

e) Impaired immunity

Correct Answer - A:B:C:D:E

**Ans. is 'All' i.e., a, b, c, d & e [Ref : Harper's 30<sup>th</sup>/e p. 553 & 29<sup>th</sup>/e p. 532, 541, 543]**

- vitamin E deficiency are characterized by axonal degeneration in the posterior columns and a selective loss of large calibre myelinated sensory axons in the spinal cord and peripheral nerves.
- Subacute combined degeneration of spinal cord, also known as Lichtheim's disease, refers to degeneration of the posterior and lateral columns of the spinal cord as a result of vitamin B12 deficiency (most common), vitamin E deficiency, and copper deficiency.
- Vitamin E activity is present in several tocopherols, the most important being  $\alpha$ -,  $\gamma$ - and  $\delta$ - tocopherol.  $\alpha$ -Tocopherol is the most abundant and is taken as the standard.
- Selenium and vitamin E supplement each other by their anti-oxidant property.
- Hemolytic anemia -due to oxidative damage to red blood cells, Impairment of the immune response, Digestive problems & Malabsorption leading to liver and pancreatic problems, Dry skin and hair loss

## 40. Vitamin C deficiency is associated with?

a) Decreased immunity

b) Improper wound healing

c) Epistaxis

d) Seizures

e) Anemia

Correct Answer - A:B:C:E

**Ans. is 'a' i.e., Decreased immunity, 'b' i.e., Improper wound healing, 'c' i.e., Epistaxis & 'e' i.e., Anemia [Ref Harper's 30<sup>th</sup> ed p. 561-65; Internet]**

- General symptoms include Low grade fever, irritability, tachypnea, digestive disturbances, loss of appetite, weakness, weight loss, vague myalgias and arthritis & arthralgias.
- Anemia Due to defect in utilization of iron & folic acid.
- Dermatological :- Dry skin, Follicular hyperkeratosis, coiled hair, splitting of hair, Poor wound healing
- Impaired immunity leading recurrent infections, Irritability and other psychologic symptoms.

## 41. True about telomerase is?

- a) DNA dependent RNA polymerase
- b) RNA dependent DNA polymerase
- c) Reverse transcriptase enzyme
- d) Increased telomerase activity is seen in somatic cells
- e) Telomerase increases the longevity of cells

Correct Answer - B:C:E

**Ans. is 'b' i.e., RNA dependent DNA polymerase, 'c' i.e. Reverse transcriptase enzyme & 'e' i.e. Telomerase increases the longevity of cells [Ref Harper 29<sup>th</sup>/e p. 358 & 28<sup>th</sup>/e p. 315, 316; Robbin's 8<sup>th</sup>/e p. 40, 296]**

- Telomerase is a reverse transcriptase (RNA dependent DNA polymerase) and is responsible for telomere synthesis and maintaining the length of telomers (replication of end of chromosome). Thus, telomerase provide longevity to the cells which contain this enzyme.
- Telomerase is absent from most of the somatic cells and hence they suffer progressive loss of telomeres and they exit the cell cycle. ■ Senescent cells lack telomerase so their telomeres get shortened by critical length and these cells remains in Go phase

## 42. Which is/are not transport protein?

a) Transferrin

b) Collagen

c) Ceruloplasmin

d) Hemoglobin

e) Albumin

Correct Answer - B

**Ans.is'b'i.e., Collagen [Ref**

***[http://www.gastrohep.com/ebooks/rodes/Rodes\\_2\\_4\\_1.pdf](http://www.gastrohep.com/ebooks/rodes/Rodes_2_4_1.pdf)***

- Collagen is a structural protein
- Albumin has circulating transport proteins such as steroids, thyroxine, triiodothyronine, fat soluble hormones, fatty acids to liver, unconjugated bilirubin, many drugs, Calcium, magnesium, cations & anions.
- Ceruloplasmin has Copper
- Hemoglobin → Oxygen from lung to tissues
- Transferrin → iron ions in the ferric form ( $Fe^{3+}$ ).



### 43. Full form of LCAT is ?

a) Lecithin cholesterol acyl transferase

b) Lecithin cholesterol alkyltransferase

c) Lecithin choline acetyltransferase

d) Lecithin choline alcohol transferase

e) Lecithin co A transferase

Correct Answer - A

**Ans. is 'a' i.e., Lecithin cholesterol acyl transferase [Ref Harper's 30<sup>th</sup> ed p. 272; Lippincott 6<sup>th</sup> ed p. 234]**

- Lecithin-cholesterol acyl transferase (LCAT) is present in HDL and esterifies the cholesterol in HDL. Major activator of LCAT is Apo-AI. Apo-C1 can also activate LCAT.
- HDL-Cholesterol appears to be the best independent predictor of coronary artery disease (inverse relationship) than any other known risk factor. That means low HDL is a much stronger predictor of coronary artery disease than increased LDL cholesterol or increased total cholesterol
- The intracellular cholesterol activates the intracellular enzyme acyl-CoA cholesterol acyl transferase (ACAT). This enzyme catalyzes transfer of an acyl group from a fatty acid derivative to cholesterol, resulting in the formation of esterified cholesterol, and this cholesterol ester is stored for subsequent use.

#### 44. Which organ cannot use ketone bodies ?

a) Brain

b) RBC

c) Muscle

d) Heart

e) Liver

Correct Answer - B:E

**Ans. is 'b' i.e., RBC & 'e' i.e., Liver [Ref Harper's 30<sup>th</sup>/e p. 227; Vasudevan et al p. 145]**

- Liver itself cannot utilize ketone bodies as it lacks the enzyme CoA-transferase which is required for activation of ketone body .
- Beside liver, RBCs also do not utilize ketone bodies (only glucose is the sole fuel for RBCs).
- Acetoacetate and p-hydroxybutyrate are used in preference to glucose as energy source by certain tissues, e.g. heart, muscle, intestinal mucosa and renal cortex. Brain also switches to using predominantly acetoacetate in starvation.
- In extrahepatic tissues, acetoacetate is activated to acetoacetyl CoA by succinyl-CoA-acetoacetate CoA transferase (thiophorase).

## 45. True regarding phenylketoneurea is?

- a) Musty order is due to phenylalanine in sweat
- b) Deficient enzyme is phenylalanine hydroxylase
- c) Autosomal dominant
- d) May be associated with impaired mental development
- e) Infants are normal at birth

Correct Answer - B:D:E

**Ans. is 'b' i.e., Deficient enzyme is phenylalanine hydroxylase, 'd' i.e. May be associated with impaired mental development & 'e' i.e. Infants are normal at birth**

*[Ref Harper's 30<sup>th</sup>/e p. 304 & 29<sup>m</sup>/e p. 288; Chatterjee 5<sup>th</sup>/e p. 426]*

- In Phenylketonuria there is inability of oxidation of phenylalanine into tyrosine. There is defective function of phenylalanine hydroxylase. ■ Toxic levels of phenylalanine (and insufficient levels of tyrosine) can interfere with infant development in ways which have permanent effects.
- The disease may present clinically with seizures, hypopigmentation and a "musty odor" to the baby's sweat and urine (due to phenylacetate, a carboxylic acid produced by the oxidation of phenylketone).
- Untreated children develop microcephaly, and demonstrate progressive impairment of cerebral function which can lead to intellectual disability, behavioral problems, and mental disorders.

## 46. Examples of chaperon include all except?

a) Calreticulin

b) Calnexin

c) Calbindin

d) BiP

e) Ubiquitin

Correct Answer - C:E

**Ans. is 'c' i.e., Calbindin & 'e' i.e. Ubiquitin [Ref Harper's 30<sup>th</sup> /e p. 609; Vasudevan 5<sup>th</sup> /e p. 17]**

- Chaperones are present in a wide range of species from bacteria to humans. Many so called 'Heat shock proteins' (HSP) are chaperones. They are also known/as stress proteins.
- Some Chaperones and Enzymes Involved in Folding that are Located in the Rough Endoplasmic Reticulum are BiP (immunoglobulin heavy chain binding protein), GRP94 (glucose-regulated protein), GRP-170, GRP-78, Calnexin, Calreticulin PDI (protein disulfide isomerase), PPI (peptidyl prolyl cis-trans isomerase), HSP47, ERp29

47.

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## Following cells are part of innate immunity?

a) B-cells

b) T-cells

c) NK-cells

d) Macrophages

e) Dendritic cells

Correct Answer - C:D:E

**Answer- C, D, E, NK-cells, Macrophages, Dendritic cells**  
**Important components of innate immunity are :-**

Cells : Phagocytic cells (macrophages, neutrophils), dendritic cells, NK cells, eosinophils, mast cells, basophils, epithelial cells (forming epithelial barrier).

Complement component antimicrobial peptides

Pattern recognition receptors (PRn)

**There are two types of PRR :**

Soluble PRR (Mannose receptors, C-reactive protein):

Surface PRR (Scavenger receptors on macrophages, Toll-like receptors).

## 48. Which of the following are type 3 hypersensitivity reactions?

a) Good Pasteur syndrome

b) Serum sickness

c) Arthus reaction

d) Asthma

e) Rheumatoid arthritis

Correct Answer - B

**Answer- B. Serum sickness**

**Local-Arthus reaction**

- Systemic-serum sickness
- Schick test
- Polyarteritis nodosa (PAN)
- Rheumatoid arthritis
- SLE
- Acute viral hepatitis
- Penicillamine toxicity
- Hyperacute graft rejection
- Type 2 lepra reaction (ENL)
- Hypersensitivity pneumonitis
- Infective endocarditis
- Henoch schonlein purpura
- Glomerulonephritis

## 49. True regarding Down syndrome is?

- a) Increased paternal age is a risk factor
- b) Karyotyping is not needed in all patients
- c) > 85% of affected patients have 1 more chromosome 21
- d) Increased nuchal translucency
- e) Associated with early onset of Alzheimer's disease

Correct Answer - B

### Answer- B. Karyotyping is not needed in all patients

- Down's syndrome is the most common chromosomal disorder and most common congenital cause of mental retardation (2nd most common genetic cause of mental retardation is Fragile -X syndrome).
- Trisomy 21- There is an extra chromosome 21 which is due to meiotic nondisjunction in ovum.
- The most important risk factor is advanced maternal age (> 35 Years).
- Antenatal Screening for Down syndrome  
**Following methods are used :-**
  - Triple test It includes (i) Unconjugated estrogen (estriol): decreased; (ii) Maternal serum alphafeto protein (MSAFP) :decreased; and (iii) hCG: increased
  - New markers: These are (i) Increased inhibin A in maternal blood; and (ii) Decreased PAPA (pregnancy associated plasma protein).
  - USG: It shows : (i) Increased nuchal translucency (increased nuchal fold thickness); (ii) Ductus venous flow reversed; and (iii) Nasal bone hypoplasia.



**50. A 14 year old boy presented with hereditary spherocytosis. Which of the following indices is/are increased?**

a) LDH

b) MCHC

c) MCV

d) Urine urobilinogen

e) Haptoglobin

Correct Answer - A:B:D

**Answer- A, B, D LDH, MCHC, Urine urobilinogen**

- MCV decreased
- MCHC increased
- LDH increased

**51. As compared to iron deficiency anemia, which of the following is decreased in anemia of chronic disease?**

a) Endogenous bone marrow iron stores

b) Serum ferritin

c) Transferrin saturation

d) TIBC

e) MCV

Correct Answer - D

**Answer- D. TIBC**

- MCV/MCH- Decreased or normal
- Serum iron- Decreased
- TIBC- Decreased, normal
- Transferrin saturation- Decreased
- Serum ferritin- Normal or increased

## 52. Antibody which is/are specific for SLE?

a) ANA

b) Anti-ds DNA

c) Anti-Sm

d) Anti-histone

e) Anti-RNP

Correct Answer - B:C

**Answer- B, C Anti-ds DNA, and Anti-Sm**

- These are the most specific antibodies for SLE.

### 53. Microcytosis can be seen in deficiency of?

a) Iron

b) Folic acid

c) Vitamin B12

d) Vitamin C

e) Vitamin B6

Correct Answer - A:D:E **Answer- A, D, E, Iron, Vitamin C, Vitamin B6 Seen in-**

- . Iron deficiency anemia (most common cause of anemia in general and of microcytic anemia in particular)
- . Thalassemia trait
- . Other hemoglobinopathies such as hemoglobin C syndrome & hemoglobin S syndrome
- . Chronic inflammation
- . Anemia of chronic disease
- . Sideroblastic anemia
- . Deficiencies - Pyridoxin (Vit B6), vitamin C and copper

## 54. Blood tests done to see liver functions include?

a) Bilirubin

b) Uric acid

c) Alanine transaminase

d) Urea

e) Albumin

Correct Answer - A

**Answer- A. Bilirubin**

. Aspartate aminotransferase/ SGOT

. Alanine transaminase/ SGPT

. Alkaline phosphatase

. Gamma- Glutamyltransferase

. Conjugated bilirubin

. Unconjugated bilirubin

. Albumin

## 55. Anaplasia is malignant tumor may lead to?

a) Change in nuclear size

b) Loss of cell polarity

c) Metaplasia

d) Increased mitosis

e) Malignant transformation

Correct Answer - A:B:D:E

**Answer- A, B, D, E, Change in nuclear size, Loss of cell polarity, Increased mitosis, Malignant transformation**

**Anaplastic cells show following features :-**

- . Loss of polarity
- . Increased nuclear cytoplasmic size ratio
- . Increased number of mitosis which is atypical
- . Hyperchromatosis
- . Pleomorphism

## 56. During inflammation, mediators involved in adhesion and movement include?

a) Compliment 5a

b) Leukotriene B4

c) Integrins

d) IL-8

e) L-selectin

Correct Answer - C:E

**Answer- C & E, Integrins, L-selectin**

Adhesion molecules	Cells	Ligand on endothelial cells	Extravasation stage
L-selection (CD62L)	Naive T lymphocytes, other leukocytes	GlyCAM-1, CD34, MadCAM-1	Tethering/Rolling
PSGL-1	Neutrophils	E-selection (CD26E), P-Selectin (CD62P), ICAM-1	Tethering/Rolling
LFA-1 (β2 Integrin)	Activated T lymphocytes, other leukocytes	ICAM-1 (CD54), ICAM-2 (CD102)	Tight adhesion
CD11A/CD18)	Activated leukocytes		
VLA-4 (β1 Inegrin,	T leukocytes, monocytes,	VCAM-1(CD106),	Tight adhesion

CD49d/CD28)	neutrophils, eosiophils, basophils Neutrophils,	Fibronectin
Mac-1 (CD11b/CD18)	Monocytes, Macrophages	ICAM- 1,iC3b, Tight adhesion fibronectin
LPAM-1 ( $\beta$ 7 integrin)	Effector T lymphocytes	VCAM-1 MAdCAM-1 adhesion fibronectin

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## 57. Causes of unconjugated hyperbilirubinemia include?

a) Sepsis

b) Crigler-Najar syndrome

c) Rotor syndrome

d) Gilbert syndrome

e) Intravascular hemolysis

Correct Answer - A:B:D:E

**Answer- A, B, D, E, Sepsis, Crigler-Najar syndrome, Gilbert syndrome, Intravascular hemolysis Unconjugated hyperbilirubinemia:-**

- Increased production of bilirubin from hemoglobin, So that the capacity of liver to conjugate bilirubin is overwhelmed by increased production, e.g.
  - . Hemolytic anemia (both intravascular and extamascular)s Hereditary sphnocytesis, G6PD deficiency.
  - . Inefrective erythropoiesis- Thalassemia, Pernicious anemia.
  - . Reduced hepatic uptake of bilirubin from bilirubin - albumin complex > Drugs,
  - . Infections:- Sepsis, UTI
  - . Impaired hepatic conjugation.

## 58. Major histocompatibility complexes are found on which cells?

a) Dendritic cells

b) Basophils

c) Eosinophils

d) T cells

e) RBCs

Correct Answer - A:B:C:D

**Answer- A, B, C, D, Dendritic cells, Basophils, Eosinophils, T cells**

**HLA complex consists of three separate clusters of genes**

**:-1) Class I (MHC-I)**

- Important cells with MHC-I (HLA-I) on surface are B-cells, T-cell, macrophages /monocytes, neutrophils, langerhans cells, dendritic cells, platelets (thrombocytes), epithelial cells of thymus and hepatocytes. MHC class I present antigen to cytotoxic CD-8 T cells.
- 2) Class II (MHC-II)  
It comprises 'D' region (HLA-DR,HLA-DQ, HLADP).It is found only on the cells of immune system, i.e.T-cells,B-cells,langerhans cells, dendritic cells, and macrophages.
- 3) Class III (MHC-III)
- Tumor necrosis factor- alpha and beta (TNF-alpha and beta).

## 59. Which of the following is NOT TRUE about mutation of p53?

a) Cell will continue to multiply

b) Cancer formation

c) Cell cycle will be arrested

d) DNA repair

e) All of the above

Correct Answer - C:D

**Answer- C & D, Cell cycle will be arrested, DNA**

- **repair** p53 is a tumor suppressor gene.
- The major functional activities of the p53 protein are cell cycle arrest and initiation of apoptosis in response to DNA damage.
- **p53 causes-**
  - Cell cycle arrest- there is arrest of cell cycle late in G1 phase. This allows time for DNA repair.
  - DNA repair- GADD 45 encodes a protein that is involved in DNA repair.
- p53 induces apoptosis.
- Mutation in p53 leads to loss of above protective mechanisms i.e. cell cycle arrest & DNA repair. It will lead to unarrested cell multiplication and finally carcinogenesis.
- Non-mutated (wild type) p53 reduces the chances of cancer.

## 60. Correct dyad of disease and their respective inheritance pattern include?

- a) Wilson disease - autosomal recessive
- b) Cystic fibrosis - autosomal dominant
- c) Marfan syndrome - autosomal recessive
- d) Gardner syndrome - autosomal dominant
- e) Duchene muscular dystrophy - X-linked recessive

Correct Answer - A:D:E

**Answer- (A) Wilson disease - autosomal recessive (D) Gardner syndrome - autosomal dominant (E) Duchene muscular dystrophy - X-linked recessive**

### **Autosomal recessive disorders**

- 1) Metabolic - Cystic fibrosis, Phenyl ketonuria, Galactosemia, Homocystinuria, Lysosomal storage dis, alpha I-antitrypsin deficiency,
- Wilson disease, Hemochromatosis, Glycogen storage disorders.

### • Autosomal dominant disorders

1. GIT- Familial polyposis coli, Gardner's syndrome
2. Skeletal - Marfan syndrome

- 1) Musculoskeletal - Duchene muscular dystrophy, Becker's dystrophy

## 61. Psammoma bodies is/are seen in -

a) Medullary ca of thyroid

b) Ependymoma

c) Papillary ca of thyroid

d) Follicular ca of thyroid

e) Meningioma

Correct Answer - C:E

**Answer- C, E, Papillary ca of thyroid, Meningioma**

- A psammoma body is a round collection of calcium, seen microscopically. The term is derived from the Greek word psammos meaning "sand." Psammoma bodies are commonly seen in certain tumors such as:
  - Papillary thyroid carcinoma
  - Papillary renal cell carcinoma
  - Serous papillary ovarian adenocarcinoma (cystadenocarcinoma)
  - Endometrial adenocarcinomas (Papillary serous carcinoma – 3%-4%)
  - Meningioma
  - Mesothelioma
- Psammoma bodies usually have a laminar appearance.

## 62. Wound healing is affected by -

a) Age

b) Nutrition

c) Dryness of wound

d) Drugs

e) Temperature

Correct Answer - A:B:C:D:E

**Answer- A, B, C, D, E, Age, Nutrition, Dryness of wound, Drugs, Temperature**

- Intrinsic factor
- Health status eg: diabetes
- Age factors
- Body build
- Nutritional status (Protein deficiency)
- Vitamin C deficiency)
- Inadequate blood supply
- Extrinsic factor-**
- Temperature
- Desiccation and maceration
- Infection (single most important factor)
- Chemical stress
- Medications eg; corticosteroids

**63. All are major criteria for rheumatic fever except:**

a) Pancarditis

b) Chorea

c) Arthritis

d) Subcutaneous nodules

e) Fever

Correct Answer - E

**Answer- E. Fever**

- Chorea, Arthritis and Carditis are major criteria for diagnosis of Rheumatic fever Fever is a minor criteria
- Erythema Marginatum is a major criteria and not Erythema nodosum.

## 64. Increase PT is seen with -

a) Warfarin administration

b) Factor V deficiency

c) Factor VIII deficiency

d) Factor IX deficiency

e) Vit K deficiency

Correct Answer - A:B:E

**Answer- A, B, E, Warfarin administration, Factor V deficiency, Vit K deficiency**

- Bleeding time- Prolongation generally indicates the defect in platelet number or function.
- Partial thromboplastin time (PTT)- A prolonged PTT V, VIII (factor VIIIc, Von wille brand factor, IX, X, XI, XII, prothrombin or fibrinogen.
- Prothrombin time(PT)- PT can results from deficiency of factor V, VII, X, prothrombin or fibrinogen V, VII, X, prothrombin or fibrinogen.
- Thrombin time- elevated in fibrinogen deficiency.
- Vitamin K deficiency also cause prolongation of both PT and aPTT as it inhibits factor II, VII, IX and X.



## 65. True in sickle cell anemia -

a) Splenomegaly

b) Microcytosis

c) Microcardia

d) Autosplenectomy

e) Gamma gandy bodies

Correct Answer - A:D:E

**Answer- A, D, E, Splenomegaly, Autosplenectomy, Gamma gandy bodies**

**Chronic hemolysis**

**Vasooocclusive symptoms**

- . Painful bone crisis
- . Hand-foot syndrome → Dactylitis of bones of hands/feet.
- . Autosplenectomy
- . Acute painful enlargement of spleen
- . There maybe cardiomegaly and leukocytosis.
- . Gamma Gandy bodies
- There is no microcytosis in sickle cell disease.

## 66. Microscopy which can be performed with minimum optical illumination -

a) Dark field

b) Bright field

c) Phase contrast

d) Confocal

e) None

Correct Answer - A:D **Answer- A & D, Dark field, Confocal**

- The light has to be reduced while using dark field & phase contrast microscope, other microscopes use full illumination.  
Dark field microscopy-
- Uses a carefully aligned light source to minimize the quantity of directly transmitted light entering the image plane, collecting only the light scattered by the sample.  
Confocal microscopy/confocal laser scanning microscopy/  
laser confocal scanning microscopy-
- Uses a scanning point of light and a pinhole to prevent out of focus light from reaching the detector.

## 67. Acanthocytes are seen in?

a) Abetalipoproteinemia

b) Severe liver disease

c) Patients with Macleod blood group

d) SLE

e) Hyperprolactinemia

Correct Answer - A:B:C

**Answer- A, B, C, Abetalipoproteinemia, Severe liver disease, Patients with Macleod blood group**

- Acanthocytes or spur cells, are abnormal erythrocytes which are spiculated with a few spiny or thorny projections of cytoplasm of varying size and surface distribution.
- The most frequent and most significant conditions with acanthocytosis include abetalipoproteinemia.
- McLeod red cell Phenotype.

## 68. Which of the following drug is not used in the treatment of mucormycosis?

a) Fluconazole

b) Voriconazole

c) Posaconazole

d) 5-flucytosine

e) Amphotericin B

Correct Answer - A:B:D

**Ans. is 'a' i.e., Fluconazole, 'b' i.e., Voriconazole & 'd' i.e., 5-flucytosine**

[Ref: Goodman 6 Gilman 11, h/e p. 1254; KDT Vh/e p. 795; www.ncbi.nlm.nih.gov]

- Amongst azole, only posaconazole is active against mucormycosis

### **Antifungal treatment of mucormycosis:**

#### **First-Line Monotherapy:**

- Mucormycosis is a serious infection and needs to be treated with prescription antifungal medication, usually amphotericin B (given through an IV), posaconazole (given through an IV or orally) or isavuconazole (given through an IV or orally).
  - Fluconazole, voriconazole, and itraconazole do not have reliable activity against mucormycosis.
- #### **5-flucytosine:**
- Flucytosine is not employed as the sole therapy except occasionally in chromoblastomycosis.
  - It is used in limited to the treatment of cryptococcal meningitis, in conjunction with AMP-B.

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## 69. Drugs contraindicated in myasthenia gravis include?

a) Neostigmine

b) Neomycin

c) Edrophonium

d) Atropine

e) Paracetamol

Correct Answer - B:D

**Ans. is 'b' i.e., Neomycin & 'd' i.e. Atropine**

- Ref: KDT Vh/e p. 110 & e p. 104; Katzung 1Ltu/e p. 107; internet
- Aspirin, non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen and naproxen, and acetaminophen (paracetamol) are considered safe for MG, that is, they have not been shown to worsen MG or cause muscle weakness.
  - Neostigmine is used in myasthenia gravis.
  - Edrophonium can be used for diagnosis of myasthenia gravis as tensilon test (for diagnosis of cholinergic crisis).

## 70. Drugs which have both $\alpha$ & receptor activity include?

a) Epinephrine

b) Nor-epinephrine

c) Phenylephrine

d) Dopamine

e) Isrenaline

Correct Answer - A:B:E

**Ans. is 'a' i.e., Epinephrine, 'b' i.e. Nor-epinephrine & 'd' i.e. Dopamine**

*Ref: Goodman and Gilman's 12th/e p. 812*

- Nor-adrenaline has mainly  $\alpha$  action with slight effect on cardiac  $\beta_1$  receptors ( $\alpha$  &  $\beta_1$  action).
- Adrenaline has nonselective action on both  $\alpha$  ( $\alpha_1 + \alpha_2$ ) &  $\beta$  ( $\beta_1 + \beta_2$ ) receptors.
- Phenylephrine is a selective  $\alpha_1$  agonist and has negligible  $\beta$  action
- Dopamine is a dopamine ( $D_1$  &  $D_2$ ) as well as adrenergic  $\alpha$  and  $\beta_1$  agonist (Not  $\beta_2$ ).
- Isoprenaline has  $\beta$  ( $\beta_1 + \beta_2$  action), but no  $\alpha$  action.

## 71. Side effects of tricyclic antidepressants include?

a) Diarrhea

b) Weight loss

c) Hypertension

d) Tremors

e) Urinary retention

Correct Answer - D:E

**Ans. is'd'i.e., Tremors &'e'i.e., Urinary retention** [Rel KDT Vh/e p. 459; Goodman & Gilman 11th/e p. 448]

### **Adverse effects of TCAs:**

- Anticholinergic- Dry mouth, bad taste, urinary retention, blurred vision, palpitations, constipation.
- Sedation, mental confusion, weakness.
- Increased appetite and weight gain.
- Sweating and fine tremor.



## 72. Dopamine at the dose of $8\mu\text{g}/\text{kg}/\text{min}$ produces?

- a) Increased systemic vascular resistance
- b) Decreased systemic vascular resistance
- c) Renal vasodilatation
- d) Increased stroke volume
- e) Increased heart rate

Correct Answer - A:C:D:E

**Ans. is 'a' i.e., Increased systemic vascular resistance, 'c' i.e. Renal vasodilation, 'd' i.e. Increased stroke volume & 'e' i.e. Increased heart rate**

[Ref: Modern pharmacology with clinical application 2d/e p. 208; KDT Vh/e p. 426; Katzung Lth/e p. 139]

### **Dopamine:**

- It is a dopamine (D1 & D2) as well as adrenergic alpha & beta 1 agonist (not beta-2).
- The D1 receptors in renal and mesenteric blood vessels are the most sensitive.
- I.v. infusion of low dose (1-5 microgram/kg/min) of dopamine dilates these vessels by raising intracellular cAMP.
- Moderately high doses produce a positive inotropic effect (direct beta 1 & D 1 action + due to NA release), but little chronotropic effect on heart).
- The advantage of this greater inotropic effect (increased force of contraction) than chronotropic effect (increased heart rate) of dopamine is that it produces smaller increase in oxygen demand by

the heart.

- Large doses (>10 micro gram/kg/min produce vasoconstriction (alpha 1 action).
  - At high doses, it is called inoconstrictor because it has inotropic and vasoconstrictor effect.
- 

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### 73. Diuretic drugs which are carbonic anhydrase inhibitors include?

a) Acetazolamide

b) Spironolactone

c) Furosemide

d) Chlorthiazide

e) Topiramate

Correct Answer - A:E

**Ans. is 'a' i.e., Acetazolamide & 'e' i.e. Topiramate**

Ref: KDT 7/e p. 5g7, 420, 155; Katzung 13h/e p. 255]

**Carbonic anhydrase inhibitors (acetazolamide):**

- Carbonic anhydrase (CAse) is an enzyme which catalyzes the reversible reaction of bicarbonate formation.
- The enzyme is present in renal tubular cells (specialty PT), gastric mucosa, exocrine pancreas, ciliary body of the eye, brain and RBC,
- Acetazolamide, dichlorphenamide, methazolamide and topiramate are carbonic anhydrase inhibitors.
- Dorzolamide & Brinzolamide is also a carbonic anhydrase inhibitors specific for CA-II.
- Carbonic anhydrase inhibitors act by a non-competitive, reversible inhibition of the enzyme carbonic anhydrase.
- As inhibition is reversible, action of carbonic anhydrase inhibitors is self limiting.

## 74. Antiplatelet drugs with adenosine receptor inhibition property include?

a) Ticlopidine

b) Clopidogrel

c) Prasugrel

d) Abciximab

e) Cilastazole

Correct Answer - A:B:C

**Ans. is 'a' i.e., Ticlopidine, 'b' i.e. Clopidogrel & 'c' i.e. Prasugrel**

Ref: KDT Vh/e p. 629 & 6h/e p. 609; Katzung 11th/e p. 598

- ADP mediated platelet activation through cAMP is inhibited by (antagonism of P2 Y12) receptors on ADP :-
- Irreversible : Ticlopidine, clopidogrel, prasugrel
- Reversible; Cangrelor, ticagrelor

## 75. Drugs with first order kinetics show?

a) Increased clearance with increase in concentration

b) Decreased elimination with concentration

c) No relation rate of elimination and concentration

d) Constant fraction of drug is eliminated per unit time

e) Half life remains constant

Correct Answer - A:D:E

**Ans. is a, i.e., increased clearance with increase in concentration, 'd' i.e. constant fraction of drug is eliminated per unit time & 'e' i.e. Half life remains constant**

[Ref: KDT p. 31; Katzung 13th/e p 48]

**Order of kinetics:**

- The rate at which elimination takes place is subjected to important influences that are referred to as order of kinetics

**There are two orders of such elimination:**

- First order kinetic (Linear Kinetics)
- Second order kinetic (Non-Linear Kinetics)
- In first order kinetic,
  - Rate of elimination directly proportional plasma concentration.
  - Clearance remains constant because, as the plasma concentration increases the rate of elimination increases proportionately ( $CL = \text{rate of elimination} / \text{Plasma Conc}$ ).
  - Half life remains constant because time required to reduce the plasma concentration to half is same (rate of elimination).

## 76. Drugs which are used in acute asthma include?

a) Budesonide

b) Terbutaline

c) Salbutamole

d) Theophylline

e) Sodium cromoglycate

Correct Answer - B:C:D

**Ans. is 'b' i.e., Terbutaline, 'c' i.e. Salbutamole & 'd' i.e. Theophylline**

[Ref: KDT Vh/e p. 223]

### **Treatment of acute asthma:**

- The only drugs effective for the treatment of acute attack of asthma are bronchodilators (beta 2-receptor agonists, anticholinergics, and methylxanthines).

### **Mild attacks:**

- For patients with mild attack inhalation of a short acting beta-2 receptor agonist, e.g. salbutamol (albuterol), terbutaline is used.
- An inhaled anticholinergic, e.g. ipratropium may be added if there is no satisfactory response to beta 2- agonists alone.
- In patients who are refractory to inhaled therapies, i.v. aminophylline (theophylline) may be effective.

### **Severe attacks:**

- Oxygen phts continuous administration of aerosolized salbutamol (albuterol) plus systemic steroids, e.g. methylprednisolone, hydrocortisone.

- Recently, MgSO<sub>4</sub> has been tried in acute severe asthma by IV or inhalation route.
- 

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## 77. Antiviral drug (s), which is/are a pro-drug?

a) Acyclovir

b) Ganciclovir

c) Ziduvudin

d) Tenofovir

e) Foscarnet

Correct Answer - A:B:C

**Ans. is 'a' i.e., Acyclovir, 'b' i.e. Ganciclovir &'c' i.e.**

**Zidovudine** [Ref. KDT 7/e p. 22 & p. 24; Goodman Gillman p. 534; Bennet Brown clinical pharma p. 404; Katzung p. 361, 385; [www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov)]

- **Anti-herpes virus:** Acyclovir, Valacyclovir, penciclovir, Famciclovir, Ganciclovir, valganciclovir.
- **Anti-Retrovirus:** Nucleoside reverse transcriptase inhibitors (NRTIs) - Zidovudine, Didanosine, Zalcitabine, Stavudine, amirudin, Abacavir.
- Foscarnet is unrelated to any nucleic acid precursor, so does not require phosphorylation for activation.
- Tenofovir is a nucleotide and does not require bioactivation by kinases.
- Oral bioavailability of tenofovir increases with meals (decreased for other NRTIs).



## 78. Antiandrogenic drugs include?

a) Danazole

b) Finasteride

c) Ketoconazole

d) Latrezole

e) Spironolactone

Correct Answer - B:C:E

**Ans. is 'b' i.e., Finasteride, 'c' i.e. Ketoconazole & 'e' i.e. Spironolactone**

- [Ref: KDT Vh/e p. 858, 302; Harrison 18th/e p.802,803]

**Antiandrogens drugs:**

**5-alpha-reductase inhibitors:**

- These drugs inhibit the enzyme 5-alpha-reductase which converts testosterone into more active dihydrotestosterone.
- These drugs are finasteride and dutasteride.
- These are used in benign prostatic hypertrophy, hirsutism and male pattern baldness.
- Side effects are decreased libido, impotence, skin rash and swelling of lips.

**Note:-**

- Finasteride selectively inhibits type-2 5 alpha-reductase, whereas dutasteride inhibits both type- 1 and type-2 5-alpha reductases.

**Other drugs with antiandrogenic action are:**

- Superactive GnRH agonists, spironolactone, cimetidine, progesterone and ketoconazole.

## 79. Antibiotics acting by inhibition of protein synthesis include?

a) Penicillin

b) Vancomycin

c) Aminoglycoside

d) Fluroquinolones

e) Chloramphenicol

Correct Answer - C:E

**Ans. is 'c' i.e., Aminoglycoside, & 'e' i.e. Chloramphenicol**

[Ref: KDT 7/e p. 734; Katzung 13'h/e p. 789]

**Inhibition of protein synthesis (translation):**

- Drugs acting by inhibiting protein synthesis are tetracyclines, chloramphenicol, aminoglycosides, Erythromycin, clindamycin, linezolid.
- All protein synthesis inhibitors are bacteriostatic except aminoglycosides and streptogramins which are bactericidal.

**These drugs can be divided into :**

**a) Based on the steps of translation (protein synthesis) on which drug act :**

- Freeze initiation: Aminoglycosides.
- Inhibit elongation : Tetracyclines, puromycin, chloramphenicol.
- Inhibit translocation : Clindamycin, erythromycin.
- Causing premature termination : Puromycin.

**b) Based on ribosome on which they act :**

- 30 S ribosome z Tetracycline, streptomycin.
- 50 S ribosome: Chloramphenicol, erythromycin, clindamycin,

- Linezolid, pleuromutilins (retapamulin).
- Both 30S and 50S ribosomes: Aminoglycoside (except streptomycin).

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## 80. First dose syncope is seen in ?

a) Alpha blocker

b) Beta blocker

c) CCB

d) ACE inhibitors

e) All of the above

Correct Answer - A:D

**Ans. is'a'i.e., Alpha blocker &'d'i.e., ACE inhibitors** ■ [Ref: KDT Vh/e p. 565 & 6h/e p. 546]

**First dose hypotension (First dose phenomenon):**

- The first-dose phenomenon is a sudden and severe fall in blood pressure that can occur when changing from a lying to a standing position the first time that an alpha blocker drug is used or when resuming the drug after many months off.
- This usually happens shortly after the first dose is absorbed into the blood and can result in syncope (fainting).
- The alpha blocker prazosin is the most notorious for producing a first dose phenomenon.
- Other drugs of the same family, doxazosin and terazosin can also cause this phenomenon, though less frequently.
- Other drugs associated with it are ACE inhibitors, Sargramostim & Muromonab, CD3.

## 81. True about benzodiazepine is:

a) GABA mimetic

b) GABA facilitator

c) Not a safe drug

d) High abuse potential

e) Powerful enzyme inducer

Correct Answer - B

**Ans. is 'b' i.e., GABA facilitator**

- [Ref.: KDT 7th/e p. 401, 402 & 6th/e p. 393; Katzung 11th/e p. 375; Goodman & Gilman 11th/e p. 405]

**Mechanism of action of benzodiazepines (BZDs):**

- Acts on GABA-A receptors.
- BZDs receptor increase the conductance of Cl<sup>-</sup> channel.
- BZDs do not themselves increase Cl<sup>-</sup> conductance, i.e. they have only GABA facilitatory but no GABA mimetic action. (Barbiturates have both GABA facilitatory and GABA mimetic actions).

## 82. Punishment for insulting the modesty of a woman comes under?

a) IPC 354

b) IPC 375

c) IPC 376

d) IPC 506

e) IPC 509

Correct Answer - A:E

**Ans. is 'a' i.e., IPC 354 & 'e' i.e., IPC 509 [Ref Reddy 30/e p. 377; <https://indiankanoon.org>]**

- IPC 354. Assault or criminal force to woman with intent to outrage her modesty.—Whoever assaults or uses criminal force to any woman, intending to outrage or knowing it to be likely that he will thereby outrage her modesty, shall be punished with imprisonment of either description for a term which may extend to two years, or with fine, or with both.
- IPC 509: Word, gesture or act intended to insult the modesty of a woman.—Whoever, intending to insult the modesty of any woman, utters any word, makes any sound or gesture, or exhibits any object, intending that such word or sound shall be heard, or that such gesture or object shall be seen, by such woman, or intrudes upon the privacy of such woman, shall be punished with simple imprisonment for a term which may extend to three year, or with fine, or with both.
- IPC 504. Intentional insult with intent to provoke breach of the peace.

• IPC 506. Punishment for criminal intimidation/

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### 83. BAL is used as an antidote in the poisoning of?

a) Arsenic

b) Cadmium

c) Mercury

d) Lead

e) Iron

Correct Answer - A:C:D

Ans. is 'a' i.e., Arsenic ; 'c' i.e., Mercury & 'd' i.e., Lead [Ref: KDT 7<sup>th</sup>ie p. 395; Katzung 12<sup>th</sup>/e p. 398, 1033]

- **Chelating agents** are used in heavy metal poisoning. They form complex with metal which is more soluble in water than the metal itself, resulting in higher renal excretion of complex.
- **Dimercaprol (BAL)** is used in poisoning by gold (Au), copper (Cu), bismuth (Bi), nickel (Ni), arsenic (As), antimony (Sb) and mercury (Hg).
- It is used as adjuvant to calcium disodium edetate in lead poisoning and adjuvant to penicillamine in copper poisoning (or wilson's disease).
- **Penicillamine** is the drug of choice for copper poisoning and wilson's disease. It is also used as an adjuvant to CaNa<sub>2</sub> EDTA in lead poisoning and to BAL in mercury poisoning.



## 84. Miosis is caused by?

a) Carbamates

b) Organophosphorus

c) Aconite

d) Dhatura

e) Cyanide

Correct Answer - A:B

**Ans. is 'a' i.e., Carbamates & 'b' i.e., Organophosphorus [Ref: Essentials of forensic medicine-786; Reddy 33/e p. 619]**

- Poisoning causing miosis (constriction of pupil) : Carbolic acid (phenol), chloral hydrate, chloroform, *barbiturates (slightly contracted and reacting to light)*, *organophosphates, carbamates*, opioids (morphine), mushroom poisoning, nitrobenzene.
- Poisoning causing mydriasis (dilatation of pupil) : *Dhatura (atropine or belladonna)*, alcohol (Ma Ewan's sign), *aconite*, nux vomica, ether, viper venom, *cyanide*, cocaine, chloroform, calatropis, pethidine and barium carbonate

**85. A patient with a recent history of convulsions, presented to emergency in subconscious state with blood pressure 60/90 mm/Hg, bradycardia & slow gasping respiration. There is increased lacrimation, salivation & sweating. On examination there is pin point pupil. Which of the following poisoning should be suspected?**

a) Opioids

b) Phenobarbitone

c) Organophosphorus

d) Dhatura

e) Strychnine

Correct Answer - C

**Ans. is 'c' i.e., Organophosphorus [Ref Parikh 6<sup>Th</sup> /e p. 10.43; Reddy 33<sup>d</sup> /e p. 5231**

- Organophosphorus poisoning compounds are irreversible inhibitors of enzyme cholinesterase, an enzyme which hydrolyzes acetylcholine.
- Thus organophosphates inhibit cholinesterase and protect acetylcholine from hydrolysis. This results in increased concentration of acetylcholine and excessive cholinergic activity.

- They inhibit cholinesterase by phosphorylating the catalytic site of enzyme. Less than 50% of cholinesterase activity is indicative of poisoning.
- Clinical features of poisoning are due to excessive cholinergic activity. Local muscarinic manifestations at the site of exposure (skin, eye, GIT) occur immediately and are followed by complex, systemic effects due to muscarinic, nicotinic and central actions

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## 86. Which of the following is NOT correct about postmortem changes?

2. Post-mortem lividity fixes at 6-8 hours
3. Rigor mortis occurs when ATPs decrease upto 85% of normal
4. Rigor mortis is delayed in cholera and strychnine poisoning
5. Cadaveric spasm is instantaneous at the time of death
6. Postmortem calorificity occurs after 5-6 hours of death

Correct Answer - C:E

**Ans. is 'c' i.e., Rigor mortis is delayed in cholera and strychnine poisoning & 'e' i.e., Postmortem calorificity occurs after 5-6 hours of death [Ref Reddy 30<sup>th</sup>/e p. 137 -148]**

- Postmortem calorificity:- Normally, temperature falls after death. But in some situations, for initial 2-3 hours the dead body may gain heat, i.e. postmortem calorificity
- After 6-12 hours, lividity is fully developed and fixed (unchangeable), i.e. primary lividity. It ends when putrefication sets in. Fixation of lividity is due to stagnation of blood in distended capillaries and venules (not due to coagulation of blood)
- Rigor mortis occurs when there is decrease in ATP upto 15% (or 85% of normal) .
- **Cadaveric spasm (instantaneous rigor or cataleptic rigidity)**
- Instantaneous rigor is defined as the condition wherein a group of muscles, which were in contracted state at the time of death, continue to be in spasm after death, without the stage of primary relaxation. Therefore, this stage preserves the attitude of the person at the time of death.

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## 87. Cephalic index in Indian population is?

d) 60-70

e) 70-75

f) 75-80

g) 80-85

h) 85-90

Correct Answer - B

**Ans. is 'b' i.e., 70-75 [Ref Reddy 30<sup>th</sup> ed p. 52]**

- Cephalic index is defined as the index of breadth of skull
  - $\text{Cephalic index} = (\text{Maximum breadth of skull} / \text{Maximum length of skull}) \times 100$
  - Based on cephalic index races are classified into following three
3. Dolichocephalic (long headed) : Cephalic index is 70-75 and is a feature of Caucasians, Pure Aryan (Indians), Aborigines, and Negroes.
  - Mesaticephalic (medium headed) : Cephalic index is 75-80 and is a feature of Europeans, and Chinese.
  - Brachycephalic (short headed) : Cephalic index is more than 80 and is a feature of **Mongolian**.

- **According to the "Treatment of terminally-ill patients bill, 2016", incompetent patient is below the age of?**

. 12 years

. 16 years

. 18 years

. 20 years

. 24 years

Correct Answer - B

**Ans is 'b' i.e., 16 years [Ref-**

**<http://www.prsindia.org/uploads/media/draft/Draft%20Passive%20pdf>]**

- "Incompetent patient" means a patient who is a minor below the age of sixteen years or a person of unsound mind or a patient who is unable to
  4. Understand the information relevant to an informed decision about his medical treatment;
  - . Retain that information;
  5. Use or weigh that information as part of the process of making his informed decision;
  - . Make an informed decision because of impairment of or a disturbance in the functioning of his mind or brain; or
  - . Communicate his informed decision (whether by speech, language or any other mode) as to medical treatment

**Which of the following fracture is specific for indicating child abuse?**

6. Posterior rib fracture

7. Scapula fracture

8. Mandibular fracture

9. Variable fractures at multiple sites

10. Pelvic fracture

Correct Answer - A:B:D

**Ans is 'a' i.e., Posterior rib fracture, 'b' i.e., Scapula fracture & 'd' i.e., Variable fractures at multiple sites [Ref: <http://pediatrics.aappublications.org/content/133/2/e477#T1>]**

High specificity	Medium specificity	Low specificity
<ul style="list-style-type: none"> <li>■ Metaphyseal lesion ("bucket handle" or "corner")</li> <li>■ Posterior rib fracture</li> <li>■ Scapular fracture</li> <li>■ Spinous process fracture</li> <li>■ Sternal fracture</li> </ul>	<ul style="list-style-type: none"> <li>• Multiple fractures in various stages of healing, especially bilateral</li> <li>• Fractures of different ages</li> <li>• Epiphyseal separation fracture</li> <li>• Vertebral body fracture/subluxation</li> <li>• Digital fracture</li> <li>• Complex skull fracture</li> </ul>	<ul style="list-style-type: none"> <li>■ Clavicular fracture</li> <li>■ Long-bone shaft</li> <li>■ Linear skull fracture</li> </ul>



## 90. Bolam test is related to?

- . Medical negligence
- . Contributory negligence
- . Privileged communication
- . Negligence by patient
- . Professional misconduct

Correct Answer - A

**Ans. is 'a' i.e., Medical negligence [Ref <http://medind.nic.in/jal/t07/0/jalt07i1p7.pdf>]**

- The judgment given by Mr. Justice Mc Nair in Bolam vs. Frien hos ,ital management committee (1951) IS a landmark decision in deciding cases of medical negligence and is known as the "Bolam test.
- Actions of doctors are to be judged by actions of other doctors skilled in that particular art under similar circumstances and at a material time.

## 7. Sin needle used to kill animals is made of?

. Datura seeds

. Ratti seeds

. Lead peroxide

. Arsenic

. Strychnine

Correct Answer - B

**Ans. is 'b' i.e., Ratti seeds [Ref Internet]**

- In the folk medicine, seeds are ground in to paste and made into needles which are inserted under the skin of the animal. Thus the animal will be poisoned for obtaining the skin.
- Similar needles have also been used to produce criminal abortion"
- Abrus precatorius, known as Indian licorice, ratti or gunja is a slender, twining, climbing plant, woody at base and is found all over the India. All the parts of this plant are poisonous.
- Seeds were used only after they have been boiled in cow's milk for 3 hours. The herb was used for sciatica, stiffness of shoulder joint, for baldness, dandruff and other hair diseases, for erysipelas and obstinate skin diseases.

## 92. True about pugilistic attitude?

- . Indicate only antimortem burn
- . Indicate only postmortem burn
- . Cannot differentiate between antemortem & postmortem burn
- . Occur due to intense heat
- . Indicate defence by victim during antemortem death

Correct Answer - C:D

**Ans. is 'c' i.e., Cannot differentiate between antemortem & postmortem burn & 'd' i.e., Occur due to intense heat**

**[Ref Parikh 6<sup>th</sup>le p. 4.156-4.157; Reddy 32<sup>nd</sup>le p. 307]**

- In body exposed to extensive heat (> 650 C), there results stiffening and flexion of all joints and clawing of fingers, known as 'Pugilistic or boxer's or defense posture', due to denaturation and coagulation of proteins.
- Contraction of paranasal sinuses causes marked ophisthotonus.
- However, heat stiffening is permanent (unlike rigor mortis which passes off after few hours)
- It is indicative of exposure to intense heat.
- It can be mistaken for a pre-death attempt to shield oneself attacker.
- This phenomenon occurs both in antemortem and postmortem burns. So difficult to differentiate between the two.

### 93. Gram negative cell wall contains?

8. Peptidoglycan

9. Lipopolysaccharides

10. Lipids

11. Teichoic acid

12. All of the above

Correct Answer - A:C

**Ans. is 'a' i.e., Peptidoglycan & 'c' i.e., Lipids**

**[Ref: Ananthanarayan 9<sup>th</sup>/e p. 15 & 8<sup>th</sup>/e p. 17; Bailey & Scott's diagnostic microbiology p. 19]**

- Lipopolysaccharide are found in the outer membrane of cell wall, not in cell wall itself
- The peptidoglycan layer of gram positive bacteria is thick and contain teichoic acid, while in gram negative bacteria it is thin and does not contain teichoic acid.
- cell wall is composed of mucopeptide (peptidoglycan or murein) scaffolding formed by N acetyl glucosamine and N acetyl muramic acid molecules alternating in chains, which are cross linked by peptide chains.
- The outer membrane is a bilayered structure composed of lipopolysaccharide.
- Scattered throughout the lipopolysaccharide macromolecules are protein structures called porins. These control the passage of nutrients and other solutes, including antibiotics, through outer membrane.

## 9. Which of the following organism(s) is/are not cultivable?

10. Mycobacterium leprae

11. Klebsiella rhinoscleromatis

12. Rhinosporidium seeberi

13. Pneumocystis jiroveci

14. None

Correct Answer - C:D

Ans. is 'c' i.e., Rhinosporidium seeberi, 'd' i.e., Pneumocystis jiroveci

[Ref Ananthnarayan<sup>8th</sup>/ep.609-610; Harrison<sup>18th</sup>lep.1671;  
[https://www.hindawi.com/journals/isrn/2013/703813/;](https://www.hindawi.com/journals/isrn/2013/703813/)  
<https://en.wikipedia.org/>]

- The life cycle of pneumocystis probably involves sexual and asexual reproduction, although definitive proof awaits the development of a reliable culture system
- Rhinosporidium seeberi has not been cultivated in media.
- M. leprae is obligate intracellular organism, thus cannot be grown in cell free culture medium. Two animals are used for cultivation.

## 95. Halophilic vibrios include?

11. Vibrio cholare

12. Vibrio parahymolyticus

13. Vibrio vulnificus

14. Vibrio alginolyticus

15. Vibrio mimicus

Correct Answer - B:C:D

**Ans. is 'b' i.e., Vibrio parahymolyticus, 'c' i.e. Vibrio vulnificus & 'd' i.e. Vibrio alginolyticus [Ref Ananthanarayan 9<sup>th</sup> le p. 311; Harrison 19<sup>th</sup> le p. 1065; Greenwood 16<sup>th</sup> /e p. 296]**

- Vibrios that have a high requirement of sodium chloride are known as halophilic vibrios. They are abundant in coastal water throughout the world.
- All vibrios are halophilic except V cholerae and V mimicus.
- Examples are - V. Parahaemolyticus, V. fluvialis, V. alginolyticus, V. Hallisae, V. Vulnificus, V. furnissii, V. damsel.
- Vibrio alginolyticus is the most salt tolerant (most halophilic) species of vibrio.

## 96. Lymphatic filariasis is caused by?

f) Loa loa

g) Wuchereria bancrofti

h) Brugia malayi

i) Brugia timori

j) Onchocerca volvulus

Correct Answer - B:C:D

**Ans. is 'b' i.e., Wuchereria bancrofti, 'c' i.e., Brugia malayi & 'd' i.e., Brugia timori [Ref: Harrison 19<sup>th</sup>/e p. 1418 & 17<sup>th</sup>/e p.1324, Panikar 6<sup>th</sup> le p.196]**

- Filariasis is a parasitic and infectious tropical disease, that is caused by filarial nematode worms.
- Lymphatic filariasis : Wuchereria bancrofti, Brugia malayi, Brugia timori.
- Lymphatic filariasis is caused by Wuchereria bancrofti: Most commonly (Bancroftian filariasis); and B. malayi & B. timori (Brugian filariasis).
- Man is the definitive host and mosquito is the intermediate host.
- Microfilariae resides in the blood and adult worm in the lymphatics.
- The inflammatory phase is characterized by Lymphangitis, lymphadenitis and adenolymphangitis. It lasts for a few days, then subsides spontaneously & recurs at irregular intervals for a period of weeks to months.

## 97. Fever with rash is caused by?

f) Streptococcus pyogens

g) Staphylococcus aureus

h) Meningococcus

i) Vibrio cholera

j) Salmonella typhi

Correct Answer - A:B:C:E

**Ans. is 'a' i.e., Streptococcus pyogens, 'b' i.e. Staphylococcus aureus, 'c' i.e. Meningococcus & 'e' i.e. Salmonella typhi**

**[Ref <https://www.infectiousdiseaseadvisor.com/infectious-diseases/fever-and-rash/article/659555/>;**

**<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4607768/1>**

- Vesiculobullous eruptions are caused by Scarlet fever, Streptococcal toxic shock syndrome, Staphylococcal toxic shock syndrome, Staphylococcal scalded-skin syndrome
- *Central distributed maculopapular eruption are caused by* Scarlet fever, Typhus, Rickettsial spotted fever, Ehrlichiosis, Typhoid fever (S. typhi), Leptospirosis,



## 98. Larva in stool can be seen in?

13. Echinococcus granulosus

14. Ankylostoma duodenale

15. Ascaris lumbricoides

16. Strongyloides stercoralis

17. Trichinella spiralis

Correct Answer - B:D:E

**Ans. is 'b' i.e., Ankylostoma duodenale, 'd' i.e. Strongyloides stercoralis & 'e' i.e. Trichinella spiralis [Ref Chatterjee 12<sup>th</sup>ie p. 172; Panikar 7<sup>th</sup>/e p. 162; Rajesh karyakarte p. 121**

**Infective forms of helminthes in stool (larva)**

- f) **Strongyloides stercoralis (filariform larva)**
- g) **Ankylostoma duodenale (filariform larva)**
- h) **Nector americans (filariform larva)**
- i) **Trichinella spiralis (encysted larva)**

**Infective forms of helminthes in stool (EGGS)**

- j) **T-solium**
- k) **Echinococcus granulosus**
- l) **H. Nana**
- m) **Ascaris lumbricoidus(enibryonated ergs)**
- n) **Enterobius (embryonated egg)**
- o) **Trichuris Trichiura (embryonated egg)**

**f) Which of the following is false regarding electron microscopy?**

- . There is arisk of radiation leakage
- . Can magnify upto 30,000 times
- . Both fixed and living specimens can be studies
- . Vaccume is not required for proper functioning
- . Black and white image

Correct Answer - C:D

**Ans. is 'c' i.e., Both fixed and living specimens can be studies & 'd' i.e. Vaccume is not required for proper functioning [Ref Essentials of medical microbiology]**

**Which of the following is not associated with *Borrelia burgdorferi*?**

15. Relapsing fever

16. Lyme disease

17. Vincent's angina

18. Transmitted by ixodid tick bite

19. Culture in BSK medium

Correct Answer - A:C

**Ans. is 'a' i.e., Relapsing fever & 'c' i.e. Vincent's angina [Ref: Ananthanarayan *W<sup>h</sup>*ie p. 380 & 8<sup>th</sup>ie p. 381]**

- **Lyme disease : Caused by *B. burgdorferi* transmitted by the bite of Ixodid ticks**
- **Relapsing fever : Caused by *B. recurrentis*, *B. duttoni*, *B. hermsii*, *B. Parkeri*, *B. turicatae*, *B. persica*, *B. hispanica*.**
- **Vincent's angina : Caused by *B. vincenti*.**
- **The culture of *B. burgdorferi* in Barbour - Stoenner - Kelly (BSK) medium permits definitive diagnosis, but this complex method has been used only research studies.**

**f) Indications of use of antibiotics in acute diarrhea include?**

- . Traveller's diarrhea
- . Bacillary dysentery
- . Caused by shiga like toxin producing E.coli
- . Cholera
- . All of the above

Correct Answer - A:B:D

**Ans. is 'a' i.e., Traveller's diarrhea, 'b' i.e. Bacillary dysentery & 'd' i.e. Cholera [Ref <https://www.aafp.org/afp/2014/0201/p180.html>]**

- Bacillary dysentery is associated with species of bacteria from the Enterobacteriaceae family. The term is usually restricted to Shigella infections.
- when used appropriately, antibiotics are effective for shigellosis, cholera, C. difficile (pseudomembranous enterocolitis), traveler's diarrhea, and protozoal infections.
- If the patient's clinical presentation suggests the possibility of Shiga toxin-producing E. coli (e.g., bloody diarrhea, history of eating seed sprouts or rare ground beef proximity to an outbreak), antibiotic use should be avoided because it may increase the risk of hemolytic uremic syndrome.
- In traveller's diarrhoea, antimicrobial therapy is unequivocally effective; Traveller's diarrhoea is mainly due to bacterial enteropathogens (approximately 80%), the most frequently isolated being enterotoxigenic E coli; Quinolone antibiotics are now the

treatment of choice

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## 102. Pre-formed toxin is?

- . Staphylococcus aureus exotoxin
- . Emetic toxin of bacillus cereus
- . Clostridium botulinum toxin
- . Vibrio cholera toxin
- . Shigella toxin

Correct Answer - A:B:C

**Ans. is 'a' i.e., Staphylococcus aureus exotoxin, 'b' i.e. Emetic toxin of bacillus cereus & 'c' i.e. Clostridium botulinum toxin [Ref Essentials of Microbiology p. 820, Harrison M<sup>l</sup> p. 1088 & 17<sup>h</sup>/e p. 816, 817]**

- Enterotoxins are produced by : Shigella, B. cereus, Staphylococcus aureus, CI perfringens, V. cholera, ETEC, EHEC, CI difficile, Yersinia enterocolitica, Rota virus.
- Preformed toxins are produced by : Staph aureus, B. cereus, CI botulinum and CI perfringens.
- Heat labile toxins are produced by : CI perfringens, LT of ETEC, V. cholerae, Diarrheal form of B. cereus.
- Heat stable toxins are produced by : Staph aureus, Y. enterocolitica, ST of ETEC, emetic form of B. cereus.

## 16. Antibody present in antigen binding site of B-cells?

f) Ig G

g) Ig M

h) Ig A

i) Ig D

j) Ig E

Correct Answer - B:D

**Ans. is 'b' i.e., IgM & 'd' i.e. IgD [Ref Ananthanarayan 9<sup>th</sup> |e p. 136 & 8<sup>th</sup> |e p. 100] B-cells**

- B cells are part of adaptive immunity. B cells constitute 10% to 20% of the circulating peripheral lymphocytes. B cells originate as well as mature in bone marrow.
- Ig M and Ig D, present on the surface of all naive B cells, constitute the antigen binding component of B-cell receptor complex. Combination of cell membrane bound Ig M or Ig D with the corresponding antigen leads to specific stimulation of the B cells - either activation and cloning to produce antibody, or suppression.

## 104. Viral hemorrhagic fever includes?

- 17. Yellow fever
- 18. West Nile fever
- 19. Lassa fever
- 20. Ross fever
- 21. Crimean - Congo fever

Correct Answer - A:C:E

**Ans. is 'a' i.e., Yellow fever, 'c' i.e., Lassa fever & 'e' i.e., Crimean  
f) Congo fever [Ref  
<http://nasi.org.in> i) Febrile group  
(fever and myalgia)**

- This is the most common group which comprises a large number of undifferentiated fevers, generally begin with or without rashes and joint pain.
- Important viruses in this group are :- Dengue, Chikungunya, West Nile, Colorado tick fever, Sandfly fever and Sindbis.
- ii) Encephalitis group**
- This group affects CNS and causes encephalitis or meningoencephalitis.
- Important virus in this group are :- California serogroup viruses (California encephalitis, Jamestown canyon, Keston, La Cross, Trivittatus), St Louis, JE, central European, Russian spring summer, West Nile, Powassan, Eastern Equine, Western Equine and Venezuela.
- iii) Hemorrhagic group**
- Hemorrhagic group is associated with hemorrhage.
- Important viruses in this group are :- Dengue, KFD, Chikungunya, Yellow fever, Lassa, Crimean HE Congo, Omek, Rift valley,



Hantavirus, Marburg or Ebola.

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## 105. True regarding odds ratio is/are?

f) Indicator of increased risk of disease in pre-disposed population

g) It is cross productivity ratio

h) Used in cohort study

i) Used in case control study

j) It is similar to relative risk

Correct Answer - A:B:D:E

**Ans. is 'a' i.e., Indicator of increased risk of disease in pre-disposed population, 'b' i.e., It is cross productivity ratio, 'd' i.e., Used in case control study & 'e' i.e., It is similar to relative risk [Ref Park 24<sup>th</sup> le p. 78]**

- From a case control study odds ratio can be derived which a measure of the strength of association between risk factor and outcome. **Indicator of increased risk of disease in pre-disposed population**
- **Odds ratio is a key parameter in analysis of case control studies.**
- **Interpretation of Odds ratios (OR): Is similar to Relative risk (RR) in cohort study (as OR is an estimate of RR)**

. **Maximum chances of HIV transmission are associated with?**

. Receptive anal sex

. Insertive anal sex

. Receptive oral sex

. Insertive oral sex

. Vaginal sex [female to male]

Correct Answer - A

**Ans.is'a'i.e.,Receptive anal sex**[Ref[Http://www.aidsmap.com/HIV-risk-levels-for-the-insertive-and-receptive-partner-in-different-types-of-sexual-intercourse/page/14434904](http://www.aidsmap.com/HIV-risk-levels-for-the-insertive-and-receptive-partner-in-different-types-of-sexual-intercourse/page/14434904)

- HIV risk levels for the insertive and receptive partner in different types of sexual intercourse
- Anal intercourse has highest risk of transmission (anal intercourse > vaginal intercourse > oral sex).
- Unprotected anal intercourse carries a higher risk of sexual HIV transmission than unprotected vaginal intercourse. Although either sexual partner can acquire HIV from the other during unprotected anal intercourse, HIV is more likely to pass from an HIV-positive insertive partner to his receptive partner than from an HIV-positive receptive partner to his or her insertive partner.

## 107. Vector born diseases are?

. Dengue

. KFD

. Japanese encephalitis

. Plague

. Yellow fever

Correct Answer - A:B:C:D:E

**Ans. is 'All' i.e., a, b, c, d & e [Ref: Park 24<sup>th</sup>/e p. 194 & 23<sup>rd</sup>/e p. 185]**

## 108. Screening tests should be?

f) Costly

g) Easy to perform

h) Difficult to perform

i) More specific

j) Less sensitive

Correct Answer - B:D

**Ans. is 'b' i.e., Easy to perform, 'd' i.e., More specific [Ref: Park 24<sup>th</sup> /e p. 149 & 23<sup>rd</sup> /e p. 387; Modern epidemiology 3<sup>rd</sup> /e p. 204]**

- The disease should be an important health problem with a recognizable latent or asymptomatic stage.
- There should be a test (screening test) which can detect the disease prior to clinical stage, with availability of a diagnostic (confirmatory) test.
- A test should have high sensitivity and specificity.
- Accuracy = (Sensitivity) (Prevalence) / (Specificity) (1 - Prevalence)
- Accuracy = True positive + True negative / True positive + False positive + True negative + False negative
- Other important criteria are : Simplicity, rapidity, low cost (cost effectiveness), safety, and ease of administration

## 109. Cash benefits in ESI scheme include?

f) Sickness

g) Medical

h) Maternal

i) Liability

j) Funeral

Correct Answer - A:B:C:E

- Ans. is 'a' i.e., Sickness, 'b' i.e., Medical, 'c' i.e., Maternal & 'e' i.e., Funeral [Ref Park 24<sup>th</sup>/e p. 853 & 23<sup>rd</sup>/e p. 816]**
- Medical benefit: -905 Rs per capita.
- Disablement benefit
  - Dependents benefit
  - Funeral expenses: -Rs. 5000 is given
  - Maternity benefit:- For confinement, the duration of benefit is 12 weeks. For miscarriage it is 6 weeks. For sickness arising out of confinement it is 30 days.
  - Sickness benefit: The sickness benefit is payable for a maximum period of 90 days in any continuous period of 365 days.
  - TOTAL 34 different diseases are given importance such as, Mental diseases (Psychoses), Chronic congestive cardiac failure,, Aplastic anaemia, Monoplegia etc

## 110. True regarding frost bite is/are?

21. Occurs at temperature below freezing point
22. When on foot, known as trench foot
23. On face it is superficial and severe from occur on extremities
24. Both 1st & 2nd degree show inflammation, edema & swelling
25. 3rd degree shows damage to skin and blood filled blister formation

Correct Answer - A:D:E

**Ans. is 'a' i.e., Occurs at temperature below freezing point, 'd' i.e., Both 1st & 2nd degree show inflammation, edema & swelling & 'e' i.e., 3<sup>rd</sup> degree shows damage to skin and blood filled blister formation [Ref Park 23<sup>rd</sup>/e p. 748; wiki]**

- Frostbite is an integer that is caused by exposure of our body to below freezing point. The underlying mechanism involves injury from ice crystals and blood clots in small blood vessels following thawing.
- Areas that are usually affected include cheeks, ears, nose and fingers and toes. There is no difference in the severity among these areas.
- In first degree The skin is numb, usually becomes white and possibly swollen, with a reddened border. Sometimes the skin is red, may feel hard or stiff., If it is treated quickly, the skin usually recovers fully.
- In second degree There is also usually quite a lot of swelling of the affected area., Blisters filled with a clear or milky fluid appear on the skin., At a late stage, lasting cold sensitivity and numbness can develop.

- Blood filled Blisters also develop. The skin feels hard and cold. In the weeks after injury, pain persists and a blackened crust (eschar) develops. There can be long term ulceration and damage to growth plates.
- 

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**f) Primary prevention of hypertension includes?**

f) Weight reduction

g) Dietary salt reduction

h) Exercise promotion

i) Early diagnosis

j) Antihypertensive drugs

Correct Answer - A:B:C

**Ans. is 'a' i.e., Weight reduction, 'b' i.e., Dietary salt reduction & 'c' i.e., Exercise promotion [Ref Park 24<sup>th</sup>/e p. 393 & 23<sup>d</sup>/e p. 374]**

- Dietary modification (Nutrition) : Reduction in salt intake to < 5 gm/day, moderate fat intake, avoidance of alcohol intake, and restriction of energy intake appropriate to body needs.
- Weight reduction and exercise promotion.
- Behavioral changes : Reduction of stress, avoidance of smoking, doing yoga and meditation.
- Health education and self care, e.g. measuring own BP. ■

Secondary prevention includes early case detection by diagnosis (i.e. identification of hypertension) and treatment.

## 23. Organism(s) included in category 'A' bioterrorism is/ are?

f) Vibrio cholera

g) Clostridium Botulinum

h) Yersinia pestis

i) Bacillus anthracis

j) Burkholderia mallie

Correct Answer - B:C:D

**Ans. is 'b' i.e., Clostridium Botulinum & 'c' i.e., Yersinia pestis & 'd' i.e., Bacillus anthracis [Ref Harrison 18<sup>th</sup> ie p. 1 76 9] ■**

Bioterrorism agents can be separated into three categories, depending on how easily they can be spread and the severity of illness or death they cause. Category A agents are considered the highest risk and Category C agents are those that are considered emerging threats for disease.

- Small pox, Anthrax (B. anthracis), Botulism (Clostridium botulinum), Plague (Yersinia pestis), tularemia (Francisella tularensis) are category A
- V. cholerae, Q. fever (Coxiella burnetii), Typhus fever (Rickettsia prowazekii), psittacosis (Chlamydia psittaci), glanders (Burkholderia mallie), Malioidosis (Burkholderia pseudomallie) are category B ■
- Emerging infections like Nipah, Hantavirus, SARS coronavirus category C

## 113. Breast milk contains?

4. Fat

5. Protein

6. Vitamine A

7. Vitamine C

8. Vitamine K

Correct Answer - A:B:C:D

**Ans. is 'a' i.e., Fat, 'b' i.e., Protein, 'c' i.e., Vitamine A**

**3. 'd' i.e., Vitamine C [Ref Park 24<sup>th</sup> ed p. 574 & 23<sup>rd</sup> ed p. 630]**

- Breast milk is rich in **polyunsaturated fatty acids**, necessary for the myelination of the **nervous system** and brain growth.
- Active lipase in the breast milk promotes digestion of fats and provides FFA.
- Iron of breast milk is very well absorbed, breastfeeding prevents against iron deficiency anemia.
- Breast milk also prevents deficiencies of vitamin A, C, D, E and zinc.
- Most of the protein is whey proteins (**lactalbumin and lactoglobulin**), which can be digested easily (In contrast cow milk contains more casein).
- Breast milk contains the ideal ratio of the amino acids **cystine, taurine and methionine** to support **development of central and peripheral nervous system**.
- **Exclusive breast feeding may cause deficiency of vitamin B12 (if mother is pure vegetarian), vitamin K, Vitamin D and fluoride.** • **Vitamin K deficiency can cause hemorrhagic disease of new born**

• There may be neonatal jaundice and golden color stool.

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## 114. True regarding Mondini's disease is/are?

- 24. Inner ear malformation
- 25. Predisposes to recurrent meningitis in children
- 26. Mostly occurs as an isolated entity
- 27. May be associated with Penderd and DiGeorge syndromes
- 28. Cochlear implants are used in treatment

Correct Answer - A:B:C:D:E

**Answer- A, B, C, D, E**

- It is an abnormality of the inner ear that is associated with sensorineural hearing loss.
- Mondini dysplasia can also predispose to recurrent meningitis.
- Mondini dysplasia usually occurs sporadically as an isolated abnormality but it can be associated with a variety of syndromes including Klippel Feil syndrome, Pendred syndrome, DiGeorge syndrome, Wildervanck syndrome, Fountain syndrome, Johanson-Blizzard syndrome.
- Treatment includes surgery to repair the defect to prevent recurrent meningitis, prophylactic antimicrobial therapy and conjugate - pneumococcal vaccination, hearing amplification aids & cochlear implants.

**f) True regarding rhinitis medica mentosa is/are?**

25. Caused by 132 - agonist sprays

26. Caused by corticosteroids spray

27. Spray itself can cause turbinate hypertrophy

28. There is inferior turbinate hypertrophy

29. Red mucosa is characteristic

Correct Answer - D

**Answer- D. There is inferior turbinate hypertrophy**

- It is a condition characterized by nasal congestion that is triggered by the extended use of topical decongestants and certain oral medications that constrict blood vessels in the lining of the nose: recreational use of intranasal cocaine salt also cause a similar condition.
- The classic Presentation is that the nasal mucous membranes appear "beefy-red," inflamed, and may show areas of punctate bleeding and scant mucus.
- The swelling of the nasal Passages caused by rebound congestion may eventually result in permanent turbinate hypertrophy.
- Topical intranasal corticosteroids appear to have benefit in rhinitis medicamentosa to control the inflammation caused by chronic vasoconstrictor use.

**f) True regarding Cald-Well-Luc surgery is/are?**

f) Approach for maxillary antrum

g) Antrostomy through inferior meatus

h) Sublabial Approach leading to opening of mandibular antrum

i) Opening of maxillary antrum through gingivolabial approach

j) Opening the maxillary antrum through canine fossa

Correct Answer - A:B:D:E

**Answer- A, B, D, E**

- Caldwell-Luc operation is a process of opening the maxillary antrum (maxillary sinus through canine fossa by sublabial approach and dealing with the pathology inside the antrum.
- Antrum is reached through an incision in gingivolabial sulcus.
- During the surgery a naso-antral window is made (antrostomy) through the inferior meatus.

## 117. True regarding otosclerosis is/are?

- 27. More common in men
- 28. Involves stapes/oval window
- 29. Flamingo pink hue behind ear drum
- 30. Carhart's notch is at 4000 Hz
- 31. Hears better in noisy environment

Correct Answer - B:C:E

**Answer- B, C, E**

- In otosclerosis-50% cases have positive family history.
- Females are affected more than males.
- Bilateral conductive deafness seen in otosclerosis is not irreversible as it can be successfully treated by stapedectomy / Stapedotomy.
- Sensorineural hearing loss occurs when later in the course of time osteosclerotic focus reaches the cochlear endosteum but actually most common hearing loss seen is conductive type.
- Carharts notch is seen in bone conduction curve at 2000 Hz.



**f) Clinical features of zygomatic fracture include?**

f) Hypoesthesia along the distribution of infra-orbital nerve

g) Flat face

h) Malocclusion of teeth

i) Flattening of malar prominences

j) Step deformity

Correct Answer - A:D:E

**Answer- A, D, E**

**Clinical features of zygoma fracture**

- Considerable swelling over zygomatic arch is common and makes clinical diagnosis more difficult.
- Flattening of malar prominence.
- Step-deformity of infraorbital margin.
- Anaesthesia in the distribution of infraorbital nerve.
- Trismus.
- The cheek may appear flattened; compared symmetry with the opposite side.

. **True regarding the use of head mirror is/are?**

- . Applied on right eye
- . Focal point should be within 6 inches
- . One eye should be closed while examining
- . Both eye should be open while focusing
- . All of the above

Correct Answer - A

**Answer- A. Applied on right eye**

**Two types of illumination is used in otolaryngological examination:**

- . Semi mobile illumination like the Bull's lamp
- 29. Mobile illumination like the Clair's head light, or cold light based head bands.
- Bull's lamp: is a semi mobile source of illumination.
- The approximate focal length of the mirror is about 10 inches.
- The mirror is fured over the right eye in such a way part of the mirror touches the nose.
- The minor is adiusted while keeping the left eye closed and the right eye is kept open to focus. Then both eyes are opened while examining.

## 120. Tone decay test is used for

f) Meiners disease

g) Otosclerosis

h) Cochlear deafness

i) Sensory neural deafness

j) Middle ear perforation

Correct Answer - D

**Answer- D. Sensory neural deafness**

- Threshold tone decay test is used for retrocochlear type of SNHL.

## 121. Causes of hypopyon include?

30. Retinitis pigmentosa

31. Fungal keratitis

32. Episcleritis

33. Bacterial keartitis

34. Multiple sclerosis

Correct Answer - B:D:E

**Answer- B, D, E**

- Hypopyon refers to accumulation of polymorphonuclear leucocytes in the lower angle of anterior chamber. It is usually accompanied by redness of the conjunctiva and the underlying episclera.

## 122. Superior rectus palsy causes?

f) Hypotropia to same side

g) Head tilt to opposite side

h) Blapheroptosis

i) Diplopia while looking on same side

j) Hypertropia on opposite side

Correct Answer - A:B:D

**Answer- A, B, D**

- Muscle paralysed- Superior rectus palsy
- Deviation of eye- Infero- medially (left) (Hypotropia)
- Maximum diplopia while looking- left (temporal) and superior to left eye to the left
- Head position- Tilted to the right and turned

### 123. True regarding tarsal plate is/are?

f) Acts a skeleton for eyelids

g) Wider in upper eyelids

h) Have Mebomian glands

i) Attached to lateral palpebral superiosis ligaments

j) Inferior plate is semilunar in shape

Correct Answer - A:B:C:D

**Answer- A, B, C, D**

- The tarsi (tarsal plates) are located directly above the lid margins.
- The medial and lateral ends of the tarsi are attached to the orbital rims by the medial and lateral palpebral ligaments.
- The superior tarsus is larger and wider.
- The lower border of the superior tarsus forms the posterior lid margin
- The inferior tarsus is elliptical in form.
- They may contain Meibomian glands and eyelash follicles.

### 32. In Field defects seen in pituitary adenoma is

f) Bitemporal hemianopia

g) Binasal hemianopia

h) Quadronopian

i) Pie in the sky

j) Amaurosis in one eye & temporal heminopia in other eye

Correct Answer - A:B:C:D

**Answer- A, B, C, D**

- Central (sagittal) chiasmatic lesions → Bitemporal hemianopia
- Lateral chiasmatic lesions → Binasal hemianopia
- Lesion to chiasma produces upper temporal quadrantic visual field defect (upper temporal quadrantic hemianopia)
- Initially pituitary lesions causes visual field in one of upper quadrant, it is also called 'pie in the sky' .

. **TRUE statement regarding infective endocarditis is/ are?**

. Jahnway lesions are blanchable hemorrhages on plams & soles

. Jahnway lesions are tender

. Jahnway lesions are non- tender

. Osler's nodes are palpable nodules on the pulp of fingers & toes

. Osler's nodes are non-tender

Correct Answer - A:C:D

**Answer- A, C, D, Jahnway lesions are blanchable hemorrhages on plams & soles, Jahnway lesions are non-tender, Osler's nodes are palpable nodules on the pulp of fingers & toes** Patients with IE presents with features occuring due to microembolization of the cardiac vegetation to the various small vessels-

**Osler's nodes**

- Painful tender erythematous nodules.
- Seen in the skin of extremities usually in the pulp of the finger & sometimes toes.

**Janeway lesions-**

- Small flat, red spots, irregular in outline
- Non tender
- Seen in palms and soles.
- They are hemorrhagic and blanch on pressure



## 126. Causes of pulsus paradoxus include?

33. Constrictive pericarditis

34. Cardiac tamponade

35. Pulmonary embolism

36. Restrictive pericarditis

37. Emphysema

Correct Answer - A:B:C

**Answer- A, B, C, Constrictive pericarditis,  
Cardiac tamponade, Pulmonary embolism**

- In normal individual the systolic B.P. decreases by 10mm Hg during inspiration.

**Causes of Pulsus paradoxus:**

- . Cardiac tamponade
- f) Chronic constrictive Pericarditis
- g) Emphysema
- h) Pulmonary embolism

. **Hypercalcemia with normal or increased with parathormone is associated with?**

f) Primary hyperparathyroidism

g) Vitamin D intoxication

h) Thiazide diuretics

i) Milk alkali syndrome

j) Familial hypercalciuric hypercalcemia

Correct Answer - A:E

**Answer- A, E, Primary hyperparathyroidism, Familial hypercalciuric hypercalcemia**

- 90% cases of hypercalcemia are caused by malignancy or hyperparathyroidism.
- Medications and familial hypocalciuric hypercalcemia.
- Familial cases of high PTH levels
- Neonatal severe hyperparathyroidism
- Primary hyperparathyroidism
- Secondary & tertiary hyperparathyroidism

## Which of the following is TRUE regarding second heart sound?

- 35. Wide split in complete RBB
- 36. Splitting increased in inspiration & decreased in expiration
- 37. Splitting decreased in inspiration & increased in expiration
- 38. Wide split in complete LBB
- 39. Best heard at Erb's point

Correct Answer - A:B:E

**Answer- A, B, E, Wide split in complete RBB, Splitting increased in inspiration & decreased in expiration, Best heard at Erb's point**

- The changes in the intrathoracic pressures during breathing are transmitted to the heart and great vessels.
- The increased amount of blood flow through the pulmonary valve produces delay in the closure of pulmonary valve.
- Prolonged P2 and Early A2 resulting in splitting of 2nd heart sound.
- During inspiration → (A2 and P2 are separated by more than 30 s)
- During expiration the splitting disappears.
- Erb's Point refers to the third intercostal space on the left sternal border where both components of S2 (A2 and P2) can be well appreciated.
  - f) Delayed electrical activation of the right ventricle-
    - Complete RBBB (proximal type)
    - g) Prolonged left ventricular mechanical systole
  - Complete LBBB (peripheral type)

### 36. True statement regarding Emery-Dreifuss muscular dystrophy is/are?

f) X-linked

g) Sudden death

h) Conduction defects

i) Cardiac involvement is rare

j) Contractures

Correct Answer - A:B:C:E

**Answer- A, B, C, E, X-linked, Sudden death, Conduction defects, Contractures**

Emery-Dreifuss Muscular Dystrophy (EDMD) is a rare genetic degenerative disease affecting skeletal muscle and the heart.

**EDMD can be subdivided into 3**

**categories-** X-linked EDMD

37. Autosomal dominant

38. Autosomal recessive

**Clinical features-**

**Triad of symptoms strongly suggests EDMD-**

39. Slowly progressive muscle weakness and wasting in a scapulohumero- peroneal distribution

40. Early contractures of the elbow, ankle, and posterior neck

41. Cardiac conduction defects, cardiomyopathy

- Onset is usually in the teenage years

**Cardiac disease-**

- Cardiac disease may present with sudden cardiac death.

**f) Which of the following are correct about cardiac arrest management according 2015 American Heart Association guidelines for Cardiopulmonary resuscitation (CPR) & Emergency Cardiovascular Care [ECG]?**

38. Ventricular fibrillation requires synchronized cardioversion

39. Monophasic defibrillators are preferred over biphasic devices

40. Epinephrine (1 mg) is the DOC for cardiac arrest

41. Lidocaine may be considered as an alternative to amiodarone for unresponsive VF/pVT

42. Vasopressin provides added advantage when combined with epinephrine

Correct Answer - C,D

**Answer- C, D, Epinephrine (1 mg) is the DOC for cardiac arrest, Lidocaine may be considered as an alternative to amiodarone for unresponsive VF/pVT**

- Defibrillation is used to treat certain types of arrhythmias (ventricular fibrillation and pulseless ventricular tachycardia) while synchronized cardioversion is used to treat others i.e. unstable narrow and wide complex tachyarrhythmias such as atrial fibrillation. atrial flutter and ventricular tachycardia.)

**f) Endocrinal causes of weight gain include?**

f) Thyrotoxicosis

g) Hypothyroidism

h) Addison disease

i) Cushing syndrome

j) Pheochromocytoma

Correct Answer - B:D

**Answer- B, D, Hypothyroidism, Cushing syndrome**

- Cushing's syndrome
- Hypothyroidism
- Insulinoma
- Craniopharyngioma

## 132. Hyperprolactinemia is associated with?

f) Pituitary adenoma

g) Hyperinsulinemia

h) Pregnancy

i) Lactation

j) All of the above

Correct Answer - E

**Answer- E. All of the above**

- f) Physiologic
  - Pregnancy
  - Lactation
- g) Hypothalamic-pituitary stalk damage
  - Craniopharyngioma
  - Suprasellar pituitary mass
  - Empty sella
  - Granulomas
  - Rathke's cyst
- h) Pituitary hypersecretion
  - f) Systemic disorder
    - Chronic renal failure
    - Hypothyroidism
    - Cirrhosis
  - g) Drug induced
    - Dopamine receptor blockers
    - Opiates
    - H2 antagonists - Cimetidine, ranitidine

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### 133. Causes of chronic empyema include?

f) Drainage of pleural effusion

g) Inadequate antibiotic treatment for acute empyema

h) Inadequate needle aspiration of acute empyema

i) Vigorous chest physiotherapy

j) Ruptured subphrenic abscess

Correct Answer - A:B:C:E

**Answer- A, B, C, E, Drainage of pleural effusion, Inadequate antibiotic treatment for acute empyema, Inadequate needle aspiration of acute empyema, Ruptured subphrenic abscess**

- f) Parapneumonic empyema- Streptococcus pneumonia is the major pathogen.
- f) Antecedent conditions such as malnutrition, measles or infection with antibiotic-resistant organisms may increase the risk of severe pneumonia accompanied by empyema.
- . Trauma is another important cause of empyema thoracis
- f) CET is therefore an important sequela of untreated or poorly treated empyema thoracis (treatment includes antibiotics).
- f) Empyema may include spread from a ruptured subphrenic abscess, cardiothoracic surgery sharp force trauma to the chest, esophageal rupture and following drainage of a pleural effusion (thoracentesis).
- f) In the treatment of acute empyema, the chronic condition is often due to an impertecily drained sinus with continuance of the original empyema cavity.

- . **A patient presented with recurrent hemoptysis. Vessel which should be evaluated for angiography include?**

. Pulmonary artery

. Pulmonary vein

. Branchial artery

. Branchial vein

. Superior vena cava

Correct Answer - A:C

**Answer- A, C, Pulmonary artery, Branchial artery**

- Hemoptysis is defined as massive (massive hemoptysis) when blood loss is more than 400-600 ml/day.

**The lung has two blood circulations-**

- A. System vessels (Bronchial vessels)
- B. Pulmonary vessels
- Most often hemoptysis originates from a bronchial artery source, with only 70% of cases arising from the pulmonary artery.

## 49. Community acquired native valve infective endocarditis is caused by?

f) Streptococcus viridians

g) Staphylococcus aureus

h) Enterococcus

i) Candida

j) Pseudomonas aerogenosa

Correct Answer - A:B:C

**Answer- A, B, C, Streptococcus viridians, Staphylococcus aureus, Enterococcus**

- Staphylococcus aureus followed by Streptococci of the viridans group and coagulase negative Staphylococci are the three most common organisms responsible for infective endocarditis.
- Staphylococcus aureus is the most common overall cause of infective endocarditis and is also the most common cause in native valve and intravenous drug users.
- Coagulase-negative staphylococci (staphylococcus aureus) is the most common cause in prosthetic valve endocarditis.
- Streptococcus viridians are the most frequently isolated microorganisms when the infection is acquired in a community setting.
- Streptococcus mutans is the most common cause of endocarditis after dental procedure.
- Bacteria causing infective endocarditis are Pseudomonas species (i/v drug abuser), S. bovis, Clostridium septicum and HACEK organisms.

- Candida albicans is associated with endocarditis in IV drug users, patients with prosthetic valves and immunocompromised patients.
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**f) Diagnostic criteria for Gullian Barre syndrome includes?**

- . Areflexia
- . Progressive weakness of at least 2 limbs
- . Exclusion of vasculitis
- . Albumin-cytological dissociation
- . Presence of fever

Correct Answer - A:B:C:D

**Answer- A, B, C, D, Areflexia, Progressive weakness of at least 2 limbs, Exclusion of vasculitis, Albumin-cytological dissociation**

**Diagnostic criteria for Guillain Barre syndrome-Required-**

- . Progressive weakness of 2 or more limbs due to neuropathy.
- . Areflexia
- . Exclusion of other causes [e.g. vasculitis]

**Supportive-**

- Mild sensory involvement
- Facial nerve or other cranial nerve involvement
- Typical C.S.F profile (albumino- cytological dissociation)
- Absence of fever

. **True statement about diabetic ketoacidosis is/are?**

. Ph < 7.3

. Ketonemia

. Absent urinary ketone bodies

. Glucose level > 300mg/dl

. Bicarbonate < 15 meq/l

Correct Answer - A:B:D:E

**Answer- A, B, D, E, Ph < 7.3, Ketonemia, Glucose level > 300mg/dl, Bicarbonate < 15 meq/l**

- Ketoacidosis is rare in type II diabetes where insulin levels although functionally inadequate are still sufficient to prevent ketone body formation.
- Arterial pH is 7.25 - 7.35, 7.0 -7.24 & < 7.0 in mild, moderate & severe DKA.

**Diabetic ketoacidosis is characterized**

**by-** Hyperglycemia,

51. Ketosis (ketonemia) and ketonuria

52. Acidosis

- Ketones are an early indicator of diabetic ketoacidosis and should be measured in individual with type I diabetes mellitus.
  - When the plasma glucose is consistently >16.7 mmol/L (300 mg/dl).
- Hyperketonemia and acidosis-**
- Hormone sensitive lipase is inhibited by insulin and activated by counter regulatory hormones.
  - The serum bicarbonate level in D.K.A. is typically decreased to less

than 15meq/l.

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**f) In a case of stroke which of the following heart condition can be suspected?**

52. Mitral stenosis

53. Aortic regurgitation

54. Patent foramen ovale

55. Recurrent atrial arrhythmias

56. Heart failure

Correct Answer - A:C:D:E

**Answer- A, C, D, E, Mitral stenosis, Patent foramen ovale, Recurrent atrial arrhythmias, Heart failure**

- The most common cause of embolic strokes are Intra-cardiac Thrombi.
- **Male sex**
- Previous Stroke or Transient Ischemic Attack
- High blood pressure
- Heart disease - myocardial infarction (heart attack), mitral stenosis, heart failure
- Cardiac arrhythmias - especially atrial fibrillation, ventricular tachycardia and ventricular fibrillation.
- Smoking
- Diabetes
- High blood cholesterol levels
- Sickle cell disease
- Oral contraceptives
- Excessive alcohol intake



### 139. Components of Cushing's triad include?

f) Bradycardia

g) Tachycardia

h) Wide pulse pressure

i) Hypotension

j) Irregular breathing

Correct Answer - A:C:E

**Answer- A, C, E, Bradycardia, Wide pulse pressure, Irregular breathing**

f) Hypertension

g) Bradycardia

h) Irregular breathing

## 54. Features of variant Crutzfeldts-Jakob disease are -

f) Viral disease

g) Prion disease

h) Occur due to consumption of beef from cattle with bovine spongiform encephalopathy

i) Sporadic form is the most common

j) Prognosis is good

Correct Answer - B:C:D

**Answer- B, C, D, Prion disease, Occur due to consumption of beef from cattle with bovine spongiform encephalopathy, Sporadic form is the most common**

- It is a rare fatal degenerative disease of central nervous system that is caused by infectious protein called prion.
- Prion are only known infectious pathogens.
- There are four forms of CJD. They are sporadic (80-85%), familial inherited (15%); iatrogenic/acquired (1%), new variant (can be acquired by eating beef meat from cattle affected by a disease similar to CID called bovine spongiform encephalopathy (BSE) or commonly "mad cow" disease).

**Clinical features-**

- Most of the Patient of CJD presents as dementia and myoclonus.

. **The marker used for determining efficacy of hepatitis B vaccination is?**

. HBsAg

. IgM anti HBc Ag

. IgG anti HBc Ag

. Anti HBs Ag

. Anti HBe Ag

Correct Answer - D

**Answer- D. Anti HBs Ag**

- "Positive Anti HBsAg determines the efficacy of hepatitis B vaccination.

**Which of the following favours diagnosis of chronic renal failure rather than acute renal failure -**

55. Anemia

56. Peripheral neuropathy

57. Small kidney

58. Renal osteodystrophy

59. Daily increase in creatinine

Correct Answer - A:B:C:D

**Answer- A, B, C, D, Anemia, Peripheral neuropathy, Small kidney, Renal osteodystrophy**

- Renal sonogram showing small kidneys- Usually CKD
- Oliguria, daily increases in serum creatinine and BUN- Probably ARF or ARF superimposed on CKD
- Severe anemia renal osteodystrophy (hyperphosphatemia, hypocalcemia)- Possibly CKD but may be ARF Peripheral neuropathy

### 143. Feature of hypomagnesemia -

f) Seizures

g) Athetoid movements

h) Tremors

i) Bradycardia

j) Improvement with Ca supplements

Correct Answer - A:B:C

**Answer- A, B, C, Seizures, Athetoid movements, Tremors Clinical features-**

- Hypocalcemia & hypokalemia like tiredness, generalized weakness, muscle cramps.
- 56. Cardiovascular:- Arrhythmias, hypertension, tachycardia & cardiac arrest including torsade de pointes.
- f) Neuromuscular and CNS :-increased irritability of the nervous system with tremors, parasthesias, system, spasticity.
- hypomagnesemia are athetosis, jerking, nystagmus, and an extensor plantar reflex, confusion, disorientation, hallucination, & depression.
- 57. Severe hypomagnesemia may cause generalized tonic-clonic seizures.
- Hypocalcemia can be worsened by isolated treatment of hypomagnemia with intravenous magnesium sulfate because sulfate binds ionized calcium.

**f) Features of parkinsonism include all except -**

58. Intention tremors

59. Flaccidity

60. Mask face

61. Rigidity

62. Resting tremors

Correct Answer - A:B

**Answer- A, B, Intention tremors, Flaccidity**

- Four cardinal features of PD that can be grouped under the acronym TRAP-
- Tremor at rest, Rigidity, Akinesia (or bradykinesia) and Postural instability.

**f) Which of the following can occur in COPD -**

. Hypoxemia

. Hypercarbia

. Decreased gas exchange in terminal bronchioles

. Acidosis

. Hypocarbia

Correct Answer - A:B:C:D

**Answer- A, B, C, D, Hypoxemia, Hypercarbia, Decreased gas exchange in terminal bronchioles, Acidosis**

- The most common symptoms of COPD are sputum production, shortness of breath, and a productive cough.
  - Emphysema is characterized by destruction of gas-exchanging air spaces i.e. the respiratory bronchioles, alveolar ducts and alveoli.
- Low oxygen levels (hypoxia) then high carbon dioxide level in the blood (hypercapnia /hypercarbia)
- There is a development of respiratory acidosis also called hypercapnic acidosis.

## 146. True regarding porphyria is/are?

59. Hydroxymethylbilane synthase(HMBS) deficiency causes acute intermittent porphyria

60. Photosensitivity is common in acute intermittent porphyria

61. Erythropoietic porphyria is caused by uroporphyrinogen decarboxylase (UROD) deficiency

62. Porphyria cutanea tarda is characterized by vesicubullous lesions

63. Erythropeitic porphyria shows strong photosensitivity

Correct Answer - A:D:E

**Answer- A,Hydroxymethylbilane synthase(HMBS) deficiency causes acute intermittent porphyria D,Porphyria cutanea tarda is characterized by vesicubullous lesions**

**E,Erythropeitic porphyria shows strong photosensitivity**

**The following table gives summary of the major findings of porphyrias**

Type and class	Enzyme involved	Major symptoms
<b>Hepatic porphyrias:</b>		
• Acute intermittent porphyria	Uroporphyrinogen I synthase	Abdominal pain Neuropsychateic.
• porphyria cutanea tarda	Uroporphyrinogen decarboxylase	Photosensitivity Abdominal pain Neuropsychateic
• Hereditary erythropeitic porphyria	Coproporphyrin oxidase	Photosensitivity Abdominal pain
	Protoporphyrinogen	



copro-porphyria		Neuropsychiatric	Photosensitivity
oxidase	• Variegate		
porphyria			
<b>Erythrohepatic</b>			
<b>porphyrias:</b>			
• Congenital	Uroporphyrinogen		
erythrohepatic	f) synthase		Photosensitivity
c porphyrias			
<b>Erythrohepatic</b>			
<b>porphyrias:</b>	Ferrochelatase		Photosensitivity
• Protoporphyrin			

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## 60. TRUE statement regarding scleroderma is/are?

- f) Localized disease more commonly involves face and extremities
- g) There is progressive pulmonary fibrosis in most cases
- h) Pulmonary arterial disease without fibrosis can also cause pulmonary arterial hypertension
- i) ACE inhibitors can be used in renal hypertension
- j) All of the above

Correct Answer - E

**Answer- E. All of the above**

- Systemic sclerosis characterized by abnormal accumulation of fibrous tissue in skin and multiple organs.
- The skin is most commonly affected, but the GIT, kidney, heart, muscles and lungs also are involved.
- **The disease is divided into two categories-**
  - 1. Diffuse scleroderma-**
    - There is rapid progression with early visceral involvement.
  - 2. Limited (localized) scleroderma (morphea)-**
    - Skin involvement is confined to fingers, forearm and face.
    - Pulmonary fibrosis- Frequent, early and severe
    - Pulmonary arterial hypertension- often in association with pulmonary fibrosis.
- **Treatment-**
  - Among patients with SRC, "ACE inhibitors" are recommended rather than other antihypertensive agents.

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. **A tuberculosis patient was sputum positive even 5 months after the treatment with rifampicin, isoniazid, moxifloxacin & amikacin. Diagnosis is?**

. MDR TB

. XDR TB

. Polydrug resistance TB

. Monoresistance

. Rifampicin resistance

Correct Answer - B:C

**Answer- B,XDR TB C,Polydrug resistance TB**

- Polydrug resistance: Resistance to more than one first-line anti-TB drug (other than INH and rifampicin).
- Multi drug resistance TB (MDR TB) is referred to resistance to "isoniazid and rifampicin".
- Rifampicin-resistance TB (RR-TB) : It includes any resistance to rifampicin. whether non resistance, multidrug resistance, polydrug resistance or extensive drug resistance.

**61. WHO conditioned guidelines for treatment of MDR TB 2016, includes 4 core drugs and add on drugs. Add on drugs are?**

f) Bedaquiline

g) Linzolid

h) Delamanid

i) Capreomycin

j) Moxifloxacin

Correct Answer - A:C

**Answer- A,Bedaquiline C,Delamanid**

- Group A=levofloxacin, moxifloxacin, gatifloxacin
- Group B=amikacin, capreomycin, kanamycin, (streptomycin);
- Group C= ethionamide (or prothionamide), cycloserine (or terizidone), linezolid, clofazimine;
- Group D2=bedaquiline, delamanid

2) A patient presented with haematuria with acute renal failure. On doing renal biopsy, it showed crescentic glomerulonephritis. Immunofluorescence findings showed C3 & IgG deposition. Most likely diagnosis among the following is?

3. Membranous glomerulonephritis

4. Minimal change disease

5. Monoclonal deposition disease

6. Acute post-infectious glomerulonephritis

7. Focal segmental glomerulosclerosis

Correct Answer - D

**Answer- D. Acute post-infectious glomerulonephritis**

- PSGN appears 1 to 4 weeks after infection of pharynx or skin by specific nephritogenic strains (12, 4 and 1) of group A beta hemolytic streptococci.
- The lesions are caused by Type III hypersensitivity reaction with immune complex deposition and complement activation, causing decreased complement level.

**Clinical features-**

- Hematuria
- Oliguria, Non-selective proteinuria
- PSGN causes acute renal failure.

- By immunofluorescence microscopy, there are irregular granular deposits of IgG, IgM and C3 in the mesangium and along the basement membrane (starry sky appearance).

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2) In a patient with ileal resection, ileo-coecal vales are spared. Which of the following can develop?

f) Bacterial overgrowth

g) Malabsorption

h) Steatorrhea

i) Cholelithiasis

j) Renal oxalate stones

Correct Answer - B:C:D:E

**Answer- B, C, D, E**

- Patients with short-bowel syndrome invariably present with a history of several intestinal resections.
- Malabsorption, diarrhea (with or without steatorrhea) is an almost constant clinical findings.
- Terminal ileum resection- watery diarrhea/ steatorrhea, malabsorbtion, megaloblastic anemia, oxalate kidney stones, cholesterol gall stones.



f) **Alcohol is a risk factor for which of the following carcinoma(s)?**

. Esophagus

. Liver

. Pancreas

. Cervix

. Larynx

Correct Answer - A:B:C:D:E

**Answer- A, B, C, D, E**

- Alcohol most strongly increased the risk for cancers of the oral cavity, pharynx, esophagus and larynx.
- Significant increases in risk also existed for cancers of the stomach, colon, rectum, liver, female breast, and ovaries.
- Alcoholic women are at high risk for in situ and invasive cervical cancer and for cancer of the vagina.

## 64. True regarding esophageal squamous cell carcinoma is/ are?

f) Barrett's esophagus is a risk factor

g) Common in middle third of esophagus

h) Stomach, jejunum or colon can be used for replacement after surgical removal

i) Chemoradiation has little role in inoperable patients

j) Staging is done by CECT

Correct Answer - B:C:E

**Answer- B, C, E**

- "The stomach remains the most Preferred esophageal substitute following esophagectomy for cancer.
- **Squamous cell carcinoma-**
- It is the most common type of esophageal carcinoma worldwide and in India. It usually occurs in middle 1/3rd (most common) and upper 1/3rd of esophagus. Some may also arise in lower 1/3rd.
- **Important risk factors-**
- Plummer -Vinson- Paterson Kelly syndrome
- Tylosis plamaris et plantaris
- Human papilloma virus (HPV) infection
- Flexible endoscopy with biopsy is the primary method for diagnosis of esophageal cancer.
- CECT chest and abdomen and Positron emission tomography (PET) are one for staging of esophageal cancer.
- Stomach, jejunum or colon can be used for replacement after

surgical removal

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## 154. True regarding acute sialadenitis is/are?

f) Most common in submandibular glands

g) Most common type is viral

h) Can present with stasis of saliva

i) There may be tender pre-auricular nodes

j) Stone removal may be done by probing through oral route

Correct Answer - B:C:E

**Answer- B, C, E, Most common type is viral, Can present with stasis of saliva, Stone removal may be done by probing through oral route**

- Sialadenitis is most common in the parotid gland.
- The most common cause of acute inflammation of the salivary glands is mumps virus.
- Sialadenitis due to bacterial infections is most commonly caused by Staphylococcus aureus.
- Stone or a kink in the salivary duct can also diminish saliva flow/stasis of saliva.
- Surgical management-
- Abscesses require drainage
- Gland excision incases of recurrent acute sialadenitis.

. **True regarding chronic pancreatitis is/are?**

- . Can present with steatorrhea and malabsorption
- . Presents with mid epigastric pain radiating to back
- . Markedly raised level of amylase & lipase
- . Predisposes to carcinoma
- . Complete pancreatectomy relieves pain in majority of patients

Correct Answer - A:B:D:E

**Answer- A,Can present with steatorrhea and malabsorption**

**B,Presents with mid epigastric pain radiating to back**

**D,Predisposes to carcinoma E,Complete pancreatectomy relieves pain in majority of patients**

**Etiology**

- Alcoholic pancreatitis - most common
- Hyperparathyroidism
- Hypertriglyceridemia
- Autoimmune

**Clinical features-**

- Abdominal pain is the most common presenting symptom.
- The patient experiences intermittent attacks of severe pain, often in the mid-abdomen or left upper abdomen and occasionally radiating in a bandlike fashion or localized to the midback.
- Chronic pancreatitis include maldigestion, malabsorption, diarrhea, bloating and weight loss. This may be due either to fear of eating or due to pancreatic exocrine insufficiency and steatorrhea & azotorrhea (protein malabsorption).

### **Serum enzymes-**

- Serum amylase and lipase levels are normal or slightly elevated in chronic pancreatitis.
- In later stage of chronic pancreatitis, atrophy of the pancreatic parenchyma results in normal serum enzyme levels because of fibrosis of the pancreas.

### **Treatment-**

#### **i) Pancreatic duct drainage**

- In patients with a dilated pancreatic duct, a Roux-en-Y side-to-side pancreatico jejunostomy is indicated.

#### **ii) Pancreatic resection-**

- If the disease is limited to the head of the pancreas, a Whipple operation (pancreaticoduodenectomy) can produce good results.

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## 156. q-SOFA score includes?

. Pulse rate

. Respiratory rate

. Systolic blood pressure

. Altered mentation

. Mean arterial pressure

Correct Answer - B:C:D

**Answer- B,Respiratory rate C,Systolic blood pressure D,Altered mentation**

- It is a validated ICU mortality prediction score, to help identify patients with suspected infection that are at high risk for poor outcome (defined as in-hospital mortality, or ICU length of stay >3 days) outside of the ICU
- The qSOFA simplifies the SOFA score drastically by only including its 3 clinical criteria.
- It is used in patients > 18 years old in a non-ICU setting (pre-hospital, ward, emergency department, step down unit) with **confirmed or suspected infection.**
- Low blood pressure - 1
- HIGH RESPIRATORY RATE - 1
- Altered mentation- 1

. **True regarding leg ulcers & their location is/are?**

f) Arterial insufficiency - tip of the toes

g) Arterial insufficiency - medial side of leg [above medial malleolus]

h) Venous insufficiency - above lateral malleolus

i) Diabetic neuropathic ulcer - planter aspect of metatarsal head

j) Pressure ulcer - heel

Correct Answer - A:C:D:E

**Answer- A, Arterial insufficiency - tip of the toes C, Venous insufficiency - above lateral malleolus D, Diabetic neuropathic ulcer - planter aspect of metatarsal head E, Pressure ulcer - heel Venous ulcer-**

- Located below the knee, most often on the inner part (medial) of the ankles. Those associated with lesser saphenous vein insufficiency may occur on outer side (lateral).
  - Associated with aching, swollen lower legs that feel more comfortable when elevated.
- Arterial ulcer-**
- Usually found on the feet, heels or toes. Toes are affected most commonly especially tips.
  - The borders of the ulcer appear as though they have been 'punched out'.
  - Frequently painful, particularly at night in bed or when the legs are at rest and elevated.



**Neurotrophic (diabetic) Ulcers-**

- Neuropathic ulcers usually occur on the plantar aspect of the foot under the metatarsal heads or on the plantar aspects of the toes.

**Pressure ulcer (pressure sore /decubitus ulcer)-**

- The hip and buttock regions account for up to 70% of all pressure injuries, with ischial tuberosity, trochanteric, and sacral locations being most common.
- The lower extremities account for an additional 15-25% of all pressure injuries, with malleolar, heel, patellar, and pretibial locations being most common.

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**TRUE statement regarding hepatocellular carcinoma is/are?**

- 67. Frequently associated with raised AFP
- 68. Good prognosis even without resection
- 69. Ultrasound guided biopsy is diagnostic
- 70. There is extensive vascular invasion
- 71. Most cases present with resectable tumor

Correct Answer - A:C:D

**Answer- A,Frequently associated with raised AFP  
C,Ultrasound guided biopsy is diagnostic D, There is extensive vascular invasion**

- It is the most common primary malignant tumor of liver.
- Most important risk factor for HCC is HBV infection. •

Risk factors are chronic alcoholism, food contaminants

**Clinical Features-**

- Hepatocellular carcinomas have a strong propensity for invasion of vascular channels. Extensive intrahepatic metastasis occurs and the tumour occasionally invades the portal vein or inferior vena cava.
- Unresected hepatocellular carcinoma has a very poor prognosis.
- The fibrolamellar variant of the HCC is associated with a more favorable prognosis.

**Diagnosis-**

- Liver Biopsy under US or CT guidance- The diagnosis can be established by percutaneous core biopsy or aspiration biopsy in most patients if the biopsy site is selected.
- MRI is the investigation of choice.

- Serological markers
- Elevated level of serum alphafetoproteins are seen in 50 - 75% cases.
- **Treatment-**
- Only 15-20% of HCC are resectable because of multicentricity, bilobar involvement, portal vein invasion and lymphatic metastasis.

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**f) TRUE statement regarding pyogenic liver abscess is/ are?**

f) More common on left side of liver

g) Surgical drainage is the treatment of choice

h) Most common organism responsible is E. coli

i) X-rays are diagnostic

j) Diagnosis is confirmed by aspiration and culture

Correct Answer - C:E

**Answer- C, Most common organism responsible is E. coli  
E, Diagnosis is confirmed by aspiration and culture**

- It can be multiloculated or a single cavity.
- It usually involves the right lobe (-75%)

**Clinical features**

- the classical description of hepatic abscess is - fever, jaundice and rt. upper quadrant pain; but this is rarely seen (-10% cases)
- most common presentation includes → fever with chills and abdominal pain (Fever is MC symptom)
- Nonspecific symptoms like malaise and anorexia are also seen

**Laboratory investigations**

- Abnormalities of LFTs are generally seen but are not severe. ■
- Alkaline phosphatase & transaminases are mildly elevated

**Bilirubin is elevated**

- Ultrasound and CT are the main diagnostic modalities.
- Diagnosis is confirmed by aspiration and culture.
- (Serology tests are helpful for diagnosing amoebic abscess not pyogenic liver abscess.)

- Treatment involves antibiotics and percutaneous catheter drainage

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## 69. Poor prognosis of breast carcinoma is associated with?

- f) Over expression of Her-2/neu
- g) Increased estrogen & progesterone receptor expression
- h) Triple negative tumor
- i) < 2% cells in 'S' phase of mitosis
- j) > 65% cells expressing Ki-67 marker

Correct Answer - A:C:E

**Answer- A,Over expression of Her-2/neu C, Triple negative tumor E, > 65% cells expressing Ki-67 marker**

- A diagnosis of triple negative breast cancer means that the three most common types of receptors i.e. estrogen receptors (ER), Progesterone receptors (PR), and the hormone epidermal growth factor receptor 2 (HER-2/neu gene) are not present in the tumor cells.
- This type of cancer is more common in women with BRCA1 gene mutations.

## 70. Luminal A breast cancer shows following feature?

f) Low grade tumor

g) Her2 /neu amplification

h) Good prognosis

i) High grade tumor

j) ER negative

Correct Answer - A:C

**Answer- A,Low grade tumor C, Good prognosis**

- Most common subtype.
  - Low grade, Slow growing.
  - Best prognosis of all subtypes
  - Hormone-receptor (ER and/or PR) positive with high expression.
  - HER2 negative/ low expression
- Low expression of the protein Ki-67

## 71. True regarding epidural hematoma is/are?

f) Arterial bleed

g) More dangerous than subdural variety

h) On CT scan it gives biconvex lenticular hyperdense appearance

i) Located on lateral side of hemisphere

j) Common after Injury at pterion

Correct Answer - A:B:C:D:E

**Answer- A,Arterial bleed B,More dangerous than subdural variety C,On CT scan it gives biconvex lenticular hyperdense appearance D,Located on lateral side of hemisphere E,Common after Injury at pterion**

- Epidural hematoma brain injuries (also referred to as extradural hemorrhages) involve blood pooling between the outer membrane (the dura) and the skull.  
**Cause-**
- Injury to middle meningeal artery.
- Accumulation of blood-
- b/w skull and dura  
**Location-**
- lateral cerebral convexities  
**Clinical features-**
- Classically lucid interval then coma, but more variable.
- Pupillary dilatation with contralateral then bilateral limb weakness.
- Slowly evolving stupor then coma  
**Radiological features-**



- Biconvex (lens shaped or lenticular)
  - In Acute cases → Hyperdense (2/3) or mixed density (1/3).
  - In chronic cases → Hypodense
  - **Surgical intervention-**
  - Urgent evacuation
- 

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### 163. In acute abdomen examination signs which are elicited in supine position include?

a) Ilio-psoas sign

b) Obturator sign

c) Rovsing sign

d) Carnett sign

e) Balance sign

Correct Answer - A:B:C:D

**Answer- A,Ilio-psoas sign B,Obturator sign C,Rovsing sign D,Carnett sign**

**Psoas sign( Cope's psoas test or Obraztsova's sign)-**

- It indicates irritation to the iliopsoas group of hip flexors in the abdomen.
- It is elicited by performing the psoas test by passively extending the thigh of a patient lying on his side or supine with knees extended.
- A positive psoas sign on the right may suggest appendicitis.

**Obturator Sign-**

- The obturator sign is based on the same principle as the psoas sign, that stretching a pelvic muscle irritated by an inflamed appendix causes pain.
- To stretch the right obturator internus muscle and elicit the sign, the patient's right hip and knee and then internally rotates the right hip with a patient lying on his side or supine.

**Rovsing's sign-**

- The patient is said to have a positive Rovsing's sign and may have

appendicitis.

- It is done in supine position.

**Carnett's sign-**

- Carnett's sign is a finding on clinical examination in which (acute) abdominal pain remains unchanged or increases when the muscles of the abdominal wall are tensed.
- A supine patient can be asked to lift the head and shoulders from the examination table to tense the abdominal muscles.

**Ballance sign-**

- The presence of a dull percussion note in both flanks of a patient lying in the left decubitus position.

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## 164. FALSE statement regarding urothelial bladder tumor is/are?

- a) Most common variety
- b) Schistosomiasis is not a risk factors
- c) Strongly related to smoking
- d) Pain is the most common presenting feature
- e) Most common site is trigone

Correct Answer - B:D

**Answer- B,Schistosomiasis is not a risk factors D,Pain is the most common presenting feature**

**There are 3 types of bladder**

**cancer-** Transitional cell cancer- (90%)

• Squamous cell carcinoma (5-10%)

• Adenocarcinoma (2%)

**Risk factors-**

- Cigarette smoking - it's the most common etiological factor
- Schistosoma haematobium - risk factor for both transitional cell carcinoma & SCC
- Drugs such as Phenacetin & chlorphenazine

**Clinical features-**

- Painless haematuria is the presenting feature in 85-90% of bladder cancer patients.
- Pain (secondary to clot retention, tumor extension into retro peritoneum or ureteral obstruction or metastasis in bony Pelvis) may rarely occur.

**Site-**

• Trisone and adjacent postero-lateral wall

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## 165. TRUE regarding hypertrophic gastric polyp is/are?

- a) Most common gastric polyp
- b) Pre-malignant
- c) Mostly non-Hodgkin's lymphoma
- d) More common in young adults
- e) Surgery is done if they are symptomatic

Correct Answer - A:E

**Answer- A, Most common gastric polyp E, Surgery is done if they are symptomatic**

They are the most common benign tumor of stomach.

**Gastric polyps are of following types**

**- 1) Hyperplastic polyp (75%)**

- It is the most common gastric polyp. It is non neoplastic. It has no malignant potential.
- Hyperplastic polyps are also referred to as inflammatory polyps.

**2) Adenomatous polyp (Adenoma)**

- Adenoma contains proliferative dysplastic epithelium and thereby has malignant potential.

**Treatment-**

- Gastric polyps that are symptomatic > 2cm or adenomatous, should be removed.

## 166. True statement(s) regarding lymphedema is/are?

- a) Can be complicated by cellulitis
- b) Congenital lymphedema is also known as Millroy's disease
- c) Commonly caused by Wuchereria bancrofti
- d) Lymphoedema congenita more likely to be unilateral
- e) Lymphedema precox is more common in males

Correct Answer - A:B:C

**Answer- A,Can be complicated by cellulitis B,Congenital lymphedema is also known as Millroy's disease C,Commonly caused by Wuchereria bancrofti**

Lymphedema is an interstitial edema of lymphatic origin.

**Types-**

**A. Primary lymphedema-**

**1) Congenital lymphedema-**

- More likely to be bilateral and involve whole leg.
- Familial version of congenital lymphedema is called Milroy's disease.

**2) Lymphedema precox-**

- Most common form of primary lymphedema (90%).
- Familial version is known as Meige's disease.

**B. Secondary lymphedema**

- Common organisms causing lymphatic filariasis including Wuchereria bancrofti, Brugia malayi, Brugia timori.
- The most common manifestation of lymphedema is edema.

**Complications-**

- It can result in chronic eczema, dermatophytosis, onychomycosis,

cellulitis, lymphangitis, lymphadenitis and in severe cases skin ulcers.

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## 167. Steps taken to prevent post-operative incised wound infection is/are?

a) Start antibiotics at least 1 day pre-operatively

b) Shaving of hair

c) One dose of antibiotic just before the incision

d) Shower preoperatively using an antiseptic

e) Prevent intraoperative hypothermia

Correct Answer - C:D:E

**Answer- C,One dose of antibiotic just before the incision D,Shower preoperatively using an antiseptic E,Prevent intraoperative hypothermia**

- They are defined as infections that occur 30 days after surgery with no implant, or within 1 year if an implant is placed and infection appears to be related to surgery.
- Most SSIs are caused by endogenous microorganisms present on the patient's skin when the surgical incision is made.
- Gram positive bacteria such as Staphylococcus aureus are the most common causative skin-dwelling microorganisms.
- Exogenous sources of microorganisms include surgical instruments, operating room surfaces, the air, and personnel.
- Hair removal was once theorized to reduce the risk of post-operative infection is actually associated with increased incidence of SSI.

**Prevention strategies-**

**Preoperative:**

- . Tobacco cessation at least 30 days prior to elective surgery
- . Antimicrobial prophylaxis

- Antimicrobial prophylaxis should be administered only for Class I (clean wound) and II wounds (clean/contaminated wound). Patients with Class III (contaminated wound) or IV wounds (Dirty wound) are presumed to be taking antimicrobial therapy already.
- c) Preoperative showering with chlorhexidine gluconate 4% solution the night before surgery.  
**Appropriate timing of administration:**  
**30 to 60 minutes prior to incision**
- 1 -2 hours for antibiotics with longer periods of infusion, such as vancomycin.  
**Perioperative techniques**
- Prevent intraoperative hypothermia  
**Treatment-**
- For superficial SSI this involves opening the wound at skin and subcutaneous level and clearing the wound.

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## 168. True regarding opsite dressing is/are?

a) Wound can be seen

b) Vapor permeable

c) Impermeable to bacteria

d) Water permeable

e) Increased chances of maceration

Correct Answer - A:B:C

**Answer- A,Wound can be seen  
B,Vapor permeable C,Impermeable to  
bacteria OPSITE post-op dressing**

- It is a transparent adhesive film. The film is moisture vapor permeable.
- OPSITE helps prevent skin maceration.
- OPSITE is resistant to water and body fluids (waterproof).
- It also acts as barrier to bacteria including MRSA.
- Allow constant monitoring on the wound and peri-wound area as wound can be seen.

## 169. True statement (s) regarding spigelian hernia is/are?

a) Protrudes through linea alba

b) Occurs at the termination of transverse abdominis muscle

c) Occurs at the lateral edge of rectus abdominis muscle

d) Contents of hernia mostly include small intestine

e) Surgery is the treatment of choice

Correct Answer - C:D:E

**Answer- C,Occurs at the lateral edge of rectus abdominis muscle D,Contents of hernia mostly include small intestine E,Surgery is the treatment of choice**

- Spigelian hernias occur secondary to a defect in the transversus abdominis muscle and rectus sheath aponeurosis.
- Spigelian hernia contents most often includes small intestine but can also include cecum appendix, sigmoid colon or omentum.
- Spigelian hernia (or lateral ventral hernia)
- A spigelian hernia is a hernia through the spigelian fascia close to the level of the arcuate line.
  - Spigelian fascia is the aponeurotic layer between the rectus abdominis muscle medially and the semilunar line laterally.

### **Treatment-**

- Once a hernia appears, surgical treatment is the only way to repair it.

## 170. TRUE regarding 2nd degree superficial burn is/are?

a) Very painful

b) Dry eschar formation

c) No spontaneous healing

d) Blister formation

e) Capillary refilling present

Correct Answer - A:D:E

**Answer- A,Very painful D,Blister formation E,Capillary refilling present**

**Superficial 2nd degree burn (Superficial partial thickness burn)**

- Involves only upper dermal layer
- Blister formation occurs
- Erythematous
- Blanch on touch
- Quite painful.
- Heal without scarring in 1- 2 weeks

## 171. Diagnostic criteria for blood stream infection from central venous catheter includes all except?

- a) Colony count from catheter culture is 5 times more than peripheral blood culture
- b) Blood culture from catheter shows colony formation at least 2 hours before the peripheral blood culture
- c) Quantitative catheter tip culture showing  $>10^3$  CFU/ catheter segment whereby the same organism [species and antibiogram] is isolated from the catheter segment and a peripheral blood sample
- d) Apparent source of blood stream infection present
- e) At least one positive peripheral blood culture

Correct Answer - D

**Answer- D. Apparent source of blood stream infection present**

- It is defined as the presence of bacteremia originating from an intravenous catheter.
- The most common cause of nosocomial bacteremia.
- **Laboratory diagnosis-**
- CRBSI means a patient with an intravascular catheter has at least one positive blood culture obtained from a peripheral vein, clinical manifestations of infections.
- **Long-term catheters-**
- Semi-quantitative growth of 15 cfu/catheter segment of the same microbe from both the insertion site culture, and the catheter hub culture strongly suggests that the catheter is the source of a

bloodstream infection.

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**172. A patient with history of trauma, presented with multiple fracture/bilateral femoral fracture, respiratory distress & red urine. For evaluation of patient all the following are included in major criteria of Gurd's criteria except?**

a) Unexplained decrease in platelets

b) Tachycardia

c) Petechiae

d) CNS depression

e) Pulmonary edema

Correct Answer - A:B

**Answer- A,Unexplained decrease in platelets**

**B, Tachycardia** ■ Gurd's criterion is for the diagnosis of fat embolism syndrome. ■ Gurd and Wilson's criteria for FES-

- Axillary & subconjunctival petechiae
- Hypoxemia
- Central nervous system depression
- Pulmonary edema



**173. In classification of contaminated wound, which of the following are included?**

a) Resection of unprepared bowel

b) Perforated appendix resection

c) Resection of intestinal fistula

d) Inguinal hernia repair

e) Hysterectomy

Correct Answer - A:B

**Answer- A,Resection of unprepared bowel B,Perforated appendix resection**

**Class III (contaminated)-**

- Open, fresh accidental wounds. In addition, operations with major breaks in sterile technique (e.g., open cardiac massage) or gross spillage from the gastrointestinal tract, and incisions in which acute, nonpurulent inflammation is encountered. ■

Examples:Appendectomy (with perforation/ peritonitis) Bowel Resection (unprepared), bile spillage.

## 174. True about compression stocking are:

a) Worn even after ulcer heals to prevent recurrence

b) Worn in morning & taken off at night before bedtime

c) Compression occurs maximum at calf

d) Worn only at edema sites

e) Provide calf pump

Correct Answer - A:B:E

**Answer- A,Worn even after ulcer heals to prevent recurrence B,Worn in morning & taken off at night before bedtime E,Provide calf pump**

- These are specialized elastic hosiery designed to help prevent the occurrence of and guard against further progression of, venous disorders such as edema, phlebitis and thrombosis.
- They also aid in the treatment & prevention of ulcers of the lower legs.
- Compression stockings are tightest at the ankles and gradually become less constrictive toward the knees and thighs. Therefore the compression level is highest around the ankle and lessens towards the top of the hose.
- Stockings are best applied upon waking before the person has got out of bed.

## 175. Ulcerative colitis true statement is/are?

a) No skip lesion

b) Almost always includes rectum

c) Can present with pain & bloody diarrhea

d) More common in smokers

e) Transmural involvement

Correct Answer - A:B:C

**Answer- A,No skip lesion B,Almost always includes rectum C,Can present with pain & bloody diarrhea**

## 176. Indications of hemorrhoidectomy in hemorrhoids include?

- a) Large first & second degree hemorrhoids
- b) Third & fourth degree hemorrhoids
- c) If not able to differentiate prolapsed hemorrhoids & lower rectal prolapse
- d) Complicated by strangulations
- e) Failure of conservative therapy

Correct Answer - B:D:E

**Answer- B,Third & fourth degree hemorrhoids D,Complicated by strangulations E,Failure of conservative therapy Operative hemorrhoidectomy (excisional hemorrhoidectomy)-**

- 3rd & 4th degree: hemorrhoids
- Other degree not cures by conservative methods
- Mixed (combined internal/external) hemorrhoids ■

Hemorrhoids complicated by strangulation

## 177. Sterile OT zone is?

a) Changing room

b) Scrub room

c) Set up room

d) Cleaner room and stores

e) Anaesthesia inducing room

Correct Answer - B:C:E

**Answer- B,Scrub room C,Set up room E,Anaesthesia inducing room**

- Zone- 3 (Sterile area)
- Operating Theatre
- Scrub Room
- Anaesthesia Room
- Set up Room

## 178. True about Phylloides tumor is/are?

a) Associated with BRCA 1

b) FNAC can diagnose reliability

c) Treated with mastectomy

d) Axillary lymph nodes are commonly involved

e) Associated with BRCA 2

Correct Answer - C:E

**Answer- C,Treated with mastectomy E,Associated with BRCA**

- 2 ■ It is a rare, predominantly benign tumor that occurs almost exclusively in the female breast. Phyllodes tumor is the most ■ commonly occurring nonepithelial neoplasm of the breast. ■ Large tumor - simple mastectomy is done

## 179. Metabolic abnormality seen in congenital hypertrophic pyloric stenosis is?

a) Hypochloremic hypokalemic metabolic alkalosis

b) Hyperchloremic hypokalemic metabolic alkalosis

c) Hypochloremic hypokalemic metabolic acidosis

d) Hyperchloremic hypokalemic metabolic acidosis

e) None

Correct Answer - A

**Answer- A. Hypochloremic hypokalemic metabolic alkalosis**

- Projectile nonbilious vomiting is the initial symptom of pyloric stenosis. The vomiting usually starts after 3 weeks of age, but symptoms may develop as early as the 1st week of life and as late as the 5 months of life.
- Hypochloremic hypokalemic metabolic alkalosis.

## 180. Congenital hypertrophic pyloric stenosis causes

a) Bilious vomiting

b) Non bilious vomiting

c) Projectile vomiting

d) Non projectile vomiting

e) None

Correct Answer - B:C

**Answer- B, Non bilious vomiting C. Projectile vomiting**

- The vomiting may or may not be projectile, however non-bilious vomiting after feed is the characteristic feature.
- In about 10-15% of infants vomitus may contain blood. This bleeding is due to reflux esophagitis, a common association with hypertrophic pyloric stenosis.
- Also know Associated anomalies occur in 6-20% of pts. This includes esophageal atresia, Hirshprung's disease, anorectal anomalies, and intestinal malrotation.



## 181. Most common post-operative complaint is/are?

a) Pain

b) Nausea

c) Vomiting

d) Sedation

e) Shivering

Correct Answer - A:B:C **Answer-  
A,Pain B,Nausea C,Vomiting**

- Nausea and vomiting episodes still persist as the most common complaint.
- Post-operative nausea and vomiting (PONV) is a common complication of surgery and anaesthesia
- Soreness in the throat if the patient needs artificial ventilation.
- Soreness and swelling around the incision site.

## 182. False about abdominal artery aneurysm (AAA) is:

- a) Surgery is indicated when AAA > 6 cm
- b) 90% of AAA is present below renal artery
- c) Mortality rate after surgery is > 25%
- d) Commonly causes colon ischemia
- e) Most common cause is atherosclerosis

Correct Answer - A:C:D

**Answer- A, Surgery is indicated when AAA > 6 cm C, Mortality rate after surgery is > 25% D, Commonly causes colon ischemia**

- It is the most common true arterial aneurysm.
- Most common site (85-90%) is infrarenal.

### **Etiology-**

- Atherosclerosis is the most common cause.
- Non-specific aorto-arteritis:- the 2nd most common cause.
- The 5 year risk of rupture of aneurysm of < 5 cm is 1 to 2%, where as it is 20-40% for aneurysm > 5cm.

- Investigation

**IOC is CECT**

### **Management-**

- Operative repair of the aneurysm with insertion of prosthetic graft or aortic stent graft is indicated for-
- For asymptomatic aneurysms AAA repair is indicated if size > 5.5 cms.
- In elective surgery of AAA the operative mortality rate approximates about 1-2% whereas after acute rupture the mortality rate of

emergency surgery generally approximate about 45-50%.

**Complications-**

- Death (1.8-5% mortality for elective open repair <1% for endovascular repair and 50% if the AAA has ruptured)
- Colon ischemia is 1% for elective repair 15-20% if the AAA has ruptured

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### 183. Hypoparathyroidism can occur in:

a) After thyroid surgery

b) Digeorge syndrome

c) Radical resection of head & neck cancer

d) MEN I

e) All

Correct Answer - A:B:C

**Answer- A,After thyroid surgery B,Digeorge syndrome C,Radical resection of head & neck cancer Genetic disorders (eg: DeGeorge syndrome)**

- . Abnormal parathyroid gland development
- . Abnormal PTH synthesis
- o Activating mutations of calcium sensing receptor (autosomal dominant hypocalcemia or sporadic isolated hypoparathyroidism)
- . Post-surgical (thyroidectomy parathyroidectomy radical neck dissection)
- o Autoimmune polyglandular syndrome

### 184. True regarding 10-0 sutures is/are?

a) Thicker than 1-0 sutures

b) Synthetic sutures

c) Diameter is 0.9 mm

d) Stronger than 1-0

e) All of the above

Correct Answer - B

**Answer- B. Synthetic sutures**

- The larger the size ascribed to the suture, the smaller the diameter be.
- 10-0 sutures- 0.2 (0.020-0.029)

## 185. Effects of hypoxemic ischemia in a neonate include?

f) Neurological damage

g) Subcutaneous fat necrosis

h) Pulmonary hypertension

i) Hyperglycemia

j) Hypercalcemia

Correct Answer - A:B:C

Ans. is 'a' i.e., Neurological damage, 'b' i.e. Subcutaneous fat necrosis & 'c' i.e., Pulmonary hypertension

### **Clinical features of hypoxic ischemic encephalopathy'**

- o Encephalopathy progress over time ?
- 83. Birth to 12 hours → Decreased level of consciousness, poor tone, decreased spontaneous movement, periodic breathing or apnoea, seizures.
- f) 12-24 hours -4 More seizures, Apnoeic spells, jitteriness, weakness.
- g) After 24 hours → Hypotonia, consciousness, poor feeding, brainstem signs (oculomotor) and pupillary disturbances.
- Hypotonia is generalized, involves both limbs and trunk and all muscles simultaneously.

## 186. Crouzon syndrome consists of :

- 84. Maxillary hypoplasia
- 85. Syndactyly
- 86. Hydrocephaly
- 87. Macrocephaly
- 88. Mandibular prognathism

Correct Answer - A:C:E

Ans. is 'a' i.e., Maxillary hypoplasia, 'c' i.e. Hydrocephaly & 'e' i.e. Mandibular prognathism

Crouzon syndrome is a genetic disorder characterized by the premature fusion of certain skull bones (craniosynostosis).

This early fusion prevents the skull from growing normally and affects the shape of the head and face.

**Many features of Crouzon syndrome result from the premature fusion of the skull bones:**

- Wide-set, bulging eyes and vision problems caused by shallow eye sockets
- Strabismus
- Midfacial hypoplasia
- Beaked nose: Upper airway obstruction develops secondary to septal deviation, midnasal abnormalities, choanal abnormalities, and nasopharyngeal narrowing
- Underdeveloped upper jaw (Maxillary hypoplasia)
- Dental problems and hearing loss, which is sometimes accompanied by narrow ear canals.
- Opening in the lip and the roof of the mouth
- Mandibular prognathism

|

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**f) Following are signs of good attachment during breast feeding –**

f) Baby's mouth is wide open

g) Baby's lower lip is inverted

h) Upper areola is more visible than lower

i) Baby's chin touching the breast

j) Pain during sucking

Correct Answer - A:C:D

Ans. is 'a' i.e., Baby's mouth is wide open, 'c' i.e., Upper areola is more visible than lower & 'd' i.e., Baby's chin touching the breast

**Signs of good attachment are**

- . Baby's mouth is wide open,
- 86. Most of the nipple and areola in the mouth, only upper areolar visible, not the lower one,
- f) Baby's chin touches the breast and
- g) Baby's lower lip is everted

**87. All are metabolic causes of liver disease except**

7. Histiocytosis

8. Hemochromatosis

9. Gaucher's disease

10. Wilson disease

11. Galactosemia

Correct Answer - A

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

**Metabolic liver diseases can be classified into 3 categories:**

■ **Manifestations due to hepatocellular necrosis:**

Galactosemia, hereditary fructose intolerance, tyrosinemia type I, Wilson disease, Hemochromatosis and  $\alpha_1$ -antitrypsin deficiency.

■ **Cholestatic jaundice** : $\alpha_1$ -antitrypsin deficiency, Byler's disease, cystic fibrosis, Niemann-Pick disease and some disorders of peroxisome biogenesis.

■ **Hepatomegaly (disorders with liver damage & storage diseases ):**  
Glycogen storage diseases, cholesteryl ester storage disease and, when associated with splenomegaly, lysosomal storage diseases (eg:- Gaucher disease).

i) In a patient with L4-L5 disc prolapse, which of the following nerve roots can get compressed?

4. L5

5. S1

6. S2

7. S2-S4

8. L4

Correct Answer - A:E

**Ans. is 'a' i.e., L5 & 'e' i.e., L4**

Like at every level, there are two nerve roots at L4-L5 - exiting nerve root i.e. L4 nerve root & traversing nerve root i.e. L5 nerve root.

So, herniated disc at the L4-L5 level, can create an L5 radiculopathy or an L4 radiculopathy, depending on where the disc herniation occurs (to the side or to the back of the disc) and which nerve root is affected:?

- Posterolateral (paracentral) - most common (90-95%), *affects the traversing /descending /lower nerve root i.e. L5 nerve root*
  - Foraminal (far lateral, extraforaminal) - less common (5-10%), *affects exiting/upper nerve root i.e. L4 nerve root*

. **Deformity associated with posterior dislocation of hip joint?**

. Flexion

. Extension

. Abduction

. Adduction

. Internal rotation

Correct Answer - A:D:E

**Ans. is 'a' i.e., Flexion, 'd' i.e., Adduction & 'e' i.e., Internal rotation**

- Usually, the head of the femur is dislocated posterior to the acetabulum when the thigh is flexed, for example, as may occur in a head-on automobile collision when the knee is driven violently against the dashboard.
- *The significant clinical findings are shortening, adduction, and internal rotation of the extremity.*
- Anteroposterior, lateral and, if fracture of the acetabulum is demonstrated, oblique radiographic projections (Judet views) are required.
- Common associated injuries include fractures of the acetabulum or the femoral head or shaft and sciatic nerve injury



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## 191. True regarding achondroplasia is?

- . Autosomal recessive
- . Disproportionate dwarfism
- . Subnormal intelligence
- . Bullet shaped vertebral bodies on radiology
- . Abnormal sexual development

Correct Answer - B:D

**Ans. is 'b' i.e., Disproportionate dwarfism & 'd' i.e., Bullet shaped vertebral bodies on radiology**

### **ACHONDROPLASIA:**

- **Achondroplasia** is a disorder of bone growth that prevents the changing of cartilage (particularly in the long bones of the arms and legs) to bone.

### **SYMPTOMS:**

**80%-99% of people have these**

**symptoms** ■ Abnormality of the metaphysis ■

Abnormality of the ribs

- Anteverted nares
- Chronic otitis media
- Depressed nasal bridge
- Frontal bossing
- Genu varum
- Hyperlordosis
- Macrocephaly
- Neonatal short-limb short stature
- Rhizomelia
- Wormian bones

**30%-79% of people have these symptoms** ■ Abnormal form of the vertebral bodies ■ Conductive hearing impairment

- Dental crowding
- Dental malocclusion
- Diaphyseal thickening
- Hyperhidrosis
- Intrauterine growth retardation
- Joint hyperflexibility
- Kyphosis
- Long thorax
- Midface retrusion
- Muscular hypotonia
- Narrow chest
- Narrow sacroiliac notch
- Obesity
- Obstructive sleep apnea
- Ventriculomegaly

**5%-29% of people have these symptoms** ■ Acanthosis nigricans ■ Death in infancy

- Dysarthria
- Elbow dislocation
- Hydrocephalus
- Joint stiffness
- Spinal canal stenosis
- Sudden cardiac death

**Percent of people who have these symptoms is not available through HPO**

- Autosomal dominant inheritance
- Brachydactyly
- Brain stem compression
- Flared metaphysis
- Generalized joint laxity
- Infantile muscular hypotonia
- Limited elbow extension
- Limited hip extension

- Lumbar hyperlordosis
- Lumbar kyphosis in infancy
- Malar flattening
- Megalencephaly
- Motor delay
- Recurrent otitis media
- Short femoral neck
- Small foramen magnum
- Spinal stenosis with reduced interpedicular distance
- Trident hand

**RADIOLOGICAL FINDING:**

- The inner contour of the pelvis has a typical, classic "champagne glass" appearance
- Large skull with relatively short base and a narrow and funnel - shaped foramen magnum
- Bullet shaped vertebral bodies
- Long and short tubular bones are short and thick with apparent increased diameter.
- Metaphysis of long bones are widened and flared, physis are notched or V -shaped.
- The spinal canal is narrow with decreased interpedicular distance as one proceeds from L1 to L5.



## Signs of compartment syndrome include?

5. Pain on passive flexion

6. Pain on active flexion

7. Swelling of fingers

8. Pallor

9. Paraesthesia

Correct Answer - B:C:D:E

**Ans. is 'b' i.e., Pain on active flexion, 'c' i.e. Swelling of fingers, 'd' i.e. Pallor & 'e' i.e. Paresthesia**

### Clinical features of compartment syndrome

- Four signs are reliable in diagnosing a compartment syndrome :-
  - Paraesthesia or hypesthesia in nerves traversing the compartment
  - Pain with passive stretching of the involved muscles (stretch pain)
  - Pain with active flexion of the muscles
  - Tenderness over the compartment
- Amongst these, stretch pain is the earliest sign of impending compartment syndrome. The ischemic muscles, when stretched, give rise to pain.
- Passive extension of fingers (stretching the fingers) produce pain in flexor compartment of forearm.
- Other features are Pulselessness, paralysis, Pallor and pain out of proportion to physical findings.
- Peripheral pulses, are present initially and disappear later. Therefore, pulse is not a reliable indicator for compartment syndrome.

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**Which of the following statement is/are correct about fracture management in children?**

- . Supracondylar fracture of humerus can be managed by closed reduction
- . Lateral condylar fracture of humerus is known as fracture of necessity
- . Lateral condylar fracture of humerus is managed by open reduction and screwing
- . Forearm fracture in children can be managed by closed reduction and casting
- . Femoral neck fracture in adults is managed by surgery and 3 screws

Correct Answer - A:B:C:D:E

**Ans. is 'a' i.e., Supracondylar fracture of humerus can be managed by closed reduction; 'b' i.e., Lateral condylar fracture of humerus is known as fracture of necessity ; 'c' i.e., Lateral condylar fracture of humerus is managed by open reduction and screwing, 'd' i.e., Forearm fracture in children can be managed by closed reduction and casting & 'e' i.e., Femoral neck fracture in adults is managed by surgery and 3 screws**

**MANGEMENT OF SOME COMMON PEDIATRIC FRACTURES:**

LOCATION OF FRACTURE	TYPE	MANAGEMENT
	Undisplaced(Gartland's type1)	Immobilization in plaster for 3 weeks.

Supracondylar # of humerus	Angulated(Gartland's type 2)	Reduction (closed) under anaesthesia followed by percutaneous pinning. Same as type 2 / open reduction if Open (compound fracture) or associated vascular injury (complicated fracture).
	Completely displaced (Gartland's types 3)	If fracture is stable : Immobilization in above elbow cast in 90 degree flexion & neutral rotation.
Lateral condyle fracture of humerus	undisplaced	If fracture is unstable : Closed reduction and percutaneous pinning (k wire fixation)
	Only displaced displaced and rotated displacement is minimal	Closed reduction and percutaneous pinning. ORIF with screws. Closed reduction and elbow cast Conservative treatment by immobilization in
Shaft of the forearm bones		thomas knee splint In situ fixation with three parallel cannulated screws (preferred)
	Undisplaced fracture or valgus impacted	< 60 years :CRIF with 3 parallel cannulated screws> ORIF. 60 - 70 years :CRIF
Femur neck	Displaced	

OLD >3WEEKS

Physiological age < 65 years

>70 YEARS: Bipolar hemiarthroplasty; AMR  
Head is viable: Mc-Murry's osteotomy; Meyer's procedure

Arthroplasty  
:Bipolar

Head hemiarthroplasty not or AMR. viable With arthritis:

Total hip replacement.

Physiological age > 65 years

Bipolar hemiarthroplasty or AMR.

With arthritis: Total hip replacement.

. of distal third of radius with dislocation or subluxation of inferior (distal) radio-ulnar joint

Galeazzi fractures inferior dislocation

Open reduction of the radius and the distal radio-ulnar joint.

## 11. All are features of inflammatory arthritis except?

. Morning stiffness

. X-ray showing sclerosis

. Elevated ESR

. Weight gain

. Swelling of joints

Correct Answer - B:D

**Ans. is 'b' i.e., X-ray showing sclerosis & 'd' i.e., Weight gain**  
**Features of inflammatory arthritis :?**

**Presence of some or all four cardinal signs of inflammation:**

- Erythema
- Pain
- Warmth
- Swelling

**Systemic symptoms**

8. Prolonged morning stiffness, often lasting for several hours.

(Non inflammatory arthritis are associated with intermittent stiffness, Stiffness usually lasts less than 1hr).

- . Fatigue
- . Fever
- . Weight Loss

**Laboratory evidence of inflammation**

- . Elevated ESR
- . Thrombocytosis
- . Elevated C reactive protein

- . Anemia of chronic disease.
    - X-ray**
  - X-ray feature of inflammatory arthritis shows rarefaction while x-ray features in non-inflammatory arthritis reveals sclerosis.
- 

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## Risk factor(s) for Leg-Calf-Perthe's disease is/are?

13. Accelerated skeletal growth

14. Growth hormone abnormalities

15. Positive family history

16. Female sex

17. Passive smoking

Correct Answer - C:E

**Ans. is 'c' i.e., Positive family history & 'e' i.e., Passive smoking  
PERTHE'S DISEASE (LEGG-CALVE PERTHE'S DISEASE)**

- Perthe's disease is also known as osteochondritis deformans juvenilis or Coxa piano or Pseudocoxalgia.
- Perthe's disease is an osteochondritis of the epiphysis of the femoral head (capital femoral epiphysis). In the disease, the femoral head becomes partly or wholly avascular and deformed. The disease occurs commonly in males in the age group of 5-10 years.
- Perthe's disease is the most common form of osteochondrosis (osteochondrosis are characterized by avascular necrosis (AVN) and defective endochondral ossification of primary or secondary ossification centres).

### **Etiology of Perthe's disease**

- The etiology remains unknown, but is currently accepted that the disorder is caused by an interruption of the blood supply to the capital femoral epiphysis, causing avascular necrosis.



## Risk factors

### Risk factors for Legg-Calve-Perthes disease include:

- **Age.** Although Legg-Calve-Perthes disease can affect children of nearly any age, it most commonly begins between ages 4 and 8.
- **Your child's sex.** Legg-Calve-Perthes is up to five times more common in boys than in girls.
- **Race.** White children are more likely to develop the disorder than are black children.
- **Genetic mutations.** In a small number of cases, Legg-Calve-Perthes disease appears to be linked to mutations in certain genes.

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## 196. All are true about septic arthritis except –

- 10. Staph aureus is the most common cause
- 11. Most common cause is E. coli
- 12. Common in children
- 13. Affects growth plate
- 14. Aspiration of joint fluid used for diagnosis

Correct Answer - B

**Ans. is 'b' i.e., Most common cause is E. coli**

**Septic arthritis (Acute suppurative arthritis)**

- Septic arthritis refers to pyogenic infection of a joint, i.e., infection of a joint by pyogenic organism (bacteria).
- The microbial spectrum is diverse in suppurative arthritis, but staphylococcus aureus infection is most common.
- The joint can become infected by : –
  - 15. Hematogenous spread from a distant site (most common route).
  - 15. Direct invasion through a penetrating wound, intra articular injection, arthroscopy.
  - 16. Direct spread from adjacent osteomyelitis especially in joints where Metaphysis is intra articular e.g., hip and shoulder.

**Clinical features**

- Disease is more common in children.
- **Knee joint is the most commonly affected joint.**
- Other joint which are affected are hip, shoulder and elbow.
- The child is toxic with fever, tachycardia, tachypnea.
- There is severe pain, swelling, and redness over the joint.

Movements are severely restricted and the joint is held in the position of ease.

- Weight bearing on limb is not possible.

**Diagnosis:**

- Aspirated synovial fluid in septic arthritis will have markedly increased polymorphonuclear leukocytes

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## 197. Hanging cast is used for?

k) Femur #

l) Radius #

m) Humerus #

n) Tibia #

o) Fibula #

Correct Answer - C

**Ans. is 'c' i.e., Humerus #**

**Cast/ Brace**

**Used In**

Hanging cast & "Sugar tong" or Coaptation splints	Fracture shaft humerus
Cylinder cast	Fracture patella
Minnerva cast, Halo device	Cervical spine
Risser's cast, Milwaukee brace	Scoliosis
Boston brace	
Palvic harness, Von Rosen splint,	Congenital (Developmental)
Ilfeld or Craig splint	Dysplasia of Hip
Broom stick (Petrie) cast, Snyder sling, Pattern - bottom brace, Toronto brace with universal joint,	
Birmingham brace,	Legg Calve-
Tachdjian brace (trilateral	Perthes Disease

hip abduction orthosis),  
Newington brace, Atlanta  
scottish Rite brace

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## 198. True about acute osteomyelitis –

k) Cannot be detected on X-ray before 2 weeks

l) Bone scan detect after 2 weeks

m) Severe pain

n) Secondary osteomyelitis associated with compound fracture is more common than primary variety

o) Limitation of movements

Correct Answer - C:E

**Ans. is 'c' i.e., Severe pain & 'e' i.e., Limitation of movements**

### **ACUTE OSTEOMYELITIS:**

18. It Primary (hematogenous): - Organisms reach the bone through blood stream.

p) Secondary: - Organism gain entry directly through wound such as in compound fractures or surgical operation.

- Hematogenous osteomyelitis is the commonest form of osteomyelitis and most common source of bone and joint infection is hematogenous.

### **Clinical features :**

- Metaphysis of long bone is the earliest and most common site involved.
- Most common in children.

### **The bones most commonly :**

- Proximal tibial
- Distal femur
- Proximal humerus.

### **Features:**

- Severe pain, fever, malaise, chills & rigors, sweating, and even

shock.

- Local tenderness (finger tip tenderness), raised local temperature, Local erythema and limitation of movements (typically the limb is held still).

**Diagnosis:**

**X-rays**

- Earliest sign : periosteal reaction (periosteal new bone formation) at the metaphysis, which takes about 7-10 days.

**Bone scan**

- Increased uptake by bone in metaphysis within 24 hours of onset of symptoms (earliest sign).

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**199.**

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## Investigations which are a part of pre-conceptual diabetes testing are?

g) Hb A1c level

h) LH & FSH level

i) Frequent blood sugar estimation

j) TSH estimation

k) All of the above

Correct Answer - A:C:D

**Ans. is 'a' i.e., HbA1c level, 'c' i.e., Frequent blood sugar estimation & 'd' i.e., TSH estimation Pre-conceptual tests in diabetic woman**

- Testing that should be done as part of preconception care for women with diabetes include the following

### **Maternal**

- Routine rubella, rapid plasma reagin
- Hepatitis B virus and HIV testing
- Blood typing
- Frequent blood sugar estimation
- Hemoglobin A1C
- Thyroid-stimulating hormone
- Serum creatinine
- Urine albumin-to-creatinine ratio, and
- Cervical cultures

### **Fetal**

- Biophysical profile
- NST

•  
Doppler umbilical arterial velocimetry

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. **True statement regarding magnesium sulphate use in eclampsia & pre-eclampsia is/are?**

. Used for the treatment of hypertension

. Can be used continuous intravenous as well as intermittent intramuscular

. In > 95% of cases successfully controls seizures of eclampsia

. Toxicity can be treated by stopping further administration and giving calcium gluconate

. Administration is continued for 24 hours after delivery

Correct Answer - B:C:D:E

**Ans. is 'b' i.e., Can be used continuous intravenous as well as intermittent intramuscular, 'c' i.e., In > 95% of cases successfully controls seizures of eclampsia, 'd' i.e., Toxicity can be treated by stopping further administration and giving calcium gluconate & 'e' i.e., Administration is continued for 24 hours after delivery**

**MAGNESIUM SUPHATE IN ECLAMPSIA & PRE-ECLAMPSIA:**

- Indicated to prevent seizures associated with pre-eclampsia, and for control of seizures with eclampsia
- In > 95% of cases successfully controls seizures of eclampsia.  
**Dose: 4-5 g (diluted in 250 mL NS/D5W) IV in combination with either :**
- Up to 10 g (10 mL of undiluted 50% solution) divided and administered IM into each buttock or

- After initial IV dose, 1-3 g/hr IV.
- MgSO<sub>4</sub> is continued 24 hours after delivery to prevent post-partum eclampsia

**Monitoring:**

- Throughout the administration of magnesium, the patient needs continuous clinical monitoring for magnesium toxicity
  - Toxicity is manifested by loss of deep tendon reflexes (patellar), decrease in respiratory rate, oliguria and altered mental status. ▪
- Comparatively, loss of deep tendon reflexes appears to be the earliest of all the signs and it occurs when the magnesium level exceeds 5 mmol/L.

**Toxicity of MgSO<sub>4</sub> is monitored by:**

- Urinary output,
- Respiratory rate,
- Knee jerk

## 20. Enzymes elevated in dysgerminoma include?

g) AFP

h) HCG

i) Insulin

j) PLAP

k) LDH

Correct Answer - B:D:E

**Ans. is 'b' i.e., HCG, 'd' i.e., PLAP & 'e' i.e., LDH**

**Dysgerminoma is the most malignant germ cell tumour (not a virilising tumour).**

- Seen in young females like other GCT (not in post menopausal women).
- It is unilateral.
- Its cut section is soft due to degeneration (gritty cut section is seen in Brenner's tumour).

**Tumour markers for Dysgerminoma are :**

- LDH
- Alpha fetoprotein is normal in dysgerminoma.
- Placental alkaline phosphatase.
- Beta HCG

- . Which of the following is NOT effective in controlling the hot flushes of menopause in a woman?

. Hormone replacement therapy

. Tibolone

. Raloxifene

. Isoflavones

. Vitamin E

Correct Answer - C

**Ans is 'c' i.e., Raloxifene**

- **Hot Flushes** : They are the 'hallmark' of menopause. Hot flushes are described as recurrent transient period of flushing, sweating and a sensation of heat often accompanied by palpitations, feelings of anxiety, and sometimes followed by chills.
- The entire episode lasts no more than 1-3 minutes and recurs 5-10 times / day (can occur upto 30 times a day). Short term estrogen therapy results in resolution of hot flushes.

**Hormone therapy**

- Estrogen therapy (most effective)
- Combined estrogen and progestin therapy
- Progestin therapy (to be given in those women in whom estrogen is contraindicated)
- Tibolone

**Non hormonal prescription medicines :Not FDA approved**

- Clonidine
- Selective serotonin reuptake inhibitor : paroxetine, fluoxetine

- Serotonin and nor epinephrine reuptake inhibitor : venlafaxine
  - Dopamine antagonist : Veralipride ▪ Gabapentin
  
  - Bellergal (combination of ergotamines, phenobarbital and belladonna, approved for the treatment of migrain).)
  - Mertazapine
  - Trazodone
  - **Non prescription medicines :**
  - Isoflavones (100 mg/day)
  - Soy products (60 g/d)
  - Vitamin E (800 IU/day)
  - **Life style changes :**
  - Reducing body temperature
  - Maintaining a healthy weight
  - Smoking cessation
  - Paced respiration
- 

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## 17. Which of the following are included in causes of precocious puberty?

k) Hypothyroidism

l) Adrenal insufficiency

m) McCune Albright syndrome

n) Craniopharyngioma

o) All of the above

Correct Answer - E

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

### **Precocious puberty**

- Puberty before the age of 8 years in girls or 9 years in boys is considered precocious puberty.
- Menarche before the age of 10 years in girls is also considered as precocious.

### **Etiology:**

#### **Central precocious puberty**

- Idiopathic : Sporadic or familial.
- Central nervous system abnormalities
  - Congenital anomalies of CNS: Hypothalamic hamartoma, hydrocephalus, pencephaly, arachnoid cysts.
  - Acquired lesions of CNS : Inflammation, granuloma, trauma, surgery, radiation, chemotherapy.
  - Tumors of CNS : Pineal tumors, optic glioma, ependymoma, craniopharyngioma.
  - Hypothyroidism

#### **Peripheral precocious puberty : Isosexual**



### **Girls**

- Ovarian causes : McCune-Albright syndrome, benign follicular cysts, granulosa-theca cell tumors; Gonadoblastoma
- Adrenal causes : Feminizing adrenal neoplasia
- Exogenous estrogen administration

### **Boys**

- Testis : Leydig cell tumor, adrenal rest tumor, testotoxicosis.
- Adrenal: CAH (21 or 11-(3 hydroxylase deficiency), virializing tumors.
- hCG secreting tumors : Hepatoma, hepatoblastoma, choriocarcinoma, chorionepithelioma, teratoma, dysgerminoma.

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## 204. Primary amenorrhea is associated with?

- 22. Polycystic ovary disease
- 23. Turner syndrome
- 24. Laurance-Moon-Biedl syndrome
- 25. Kallmann syndrome
- 26. Kustner-Hauser- syndrome

Correct Answer - A:B:C:D:E

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

### CAUSE OF PRIMARY AMENORRHEA:

	<b>Stress , emotional disturbances , infection,</b>
<b>Cerebral cortex</b>	<b>trauma</b>
Hypothalamus	Delayed puberty, <i>Kallmann syndrome</i> , vigorous exercise, weight loss, anorexia nervosa, chronic disease (such as TB)
Pituitary	Empty sella, Frohlich syndrome, <i>Laurance-Moon-Biedl syndrome</i> , cushing disease, pineal tumor, prolactinoma, galactosemia
Ovary	Primary ovarian failure (Savage syndrome), resistant ovarian syndrome, PCOD, 17-hydroxylase deficiency
Genital tract	Absent uterus in <i>Mayer-Rokitansky-Kiister-Hauser (MRKH) syndrome</i> , refractory endometrium, imperforated hymen, transverse vaginal septum, atresia of upper third of vagina and cervix, complete absence of vagina
	Intersex, <i>Turner syndrome (45X0)</i> , testicular

Chromosomal	feminization syndrome (46XY), pure Gonadal dysgenesis (46XX OR XY)
Other endocrine glands	Juvenile diabetes, cretinism, adrenogenital syndrome
Drugs	Tranquilizers, antidepressants, antihypertensives, estrogen, metaclopramide
Nutrition/systemic illness	Overweight, Malnutrition, weight loss, anemia, TB

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**g) Methods used for delivery of shoulder in shoulder dystocia include?**

k) Lovset maneuver

l) MacRobert's maneuver

m) Penderd maneuver

n) Wood's maneuver

o) Jacquemier maneuver

Correct Answer - B:D:E

**Ans. is 'b' i.e., MacRobert's maneuver, 'd' i.e., Wood's maneuver & 'e' i.e., Jacquemier maneuver**

**Shoulder Dystocia Maneuvers**

**Maternal Maneuvers**

- McRoberts maneuver
- Suprapubic pressure
- Gaskin maneuver (all-fours)
- Sims maneuver (lateral decubitus)
- Ramp maneuver
- Symphysiotomy

**Fetal Maneuvers**

- Rubin maneuver
- Jacquemier maneuver (posterior arm delivery)
- Wood screw maneuver
- Zavanelli maneuver (cephalic replacement)
- 4 Cleidotomy
- Shute forceps maneuver

**206.**

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## Which of the following important points needed to be informed to a pregnant woman when taking consent vaginal birth after caesarean section (VBAC)?

- . Chances of uterine rupture are 4-5%
- . Chances of uterine rupture are double with previous history of more than one caesarean section
- . Uterine delivery is contraindicated in females with previous history of lower segment caesarean section
- . Chances of fetal compromise are 15-25%
- . None

Correct Answer - E

**Ans. is 'None'**

### **Vaginal Birth After Cesarean (VBAC) Trial of Labour (TOL Selection Criteria**

- One previous lower segment transverse scar
- Pelvis adequate for the fetus
- Continued labour monitoring possible
- Availability of resources (Anesthesia, blood transfusion and OT), for emergency cesarean section within 30 minutes of decision ■

Informed consent of the women

### **Contraindications**

- Previous classical or inverted-T shaped uterine incision
- Previous 2 or more LSCS
- Pelvis contracted or suspected CPD
- Presence of other complications in pregnancy- Obstetric(Pre-

- eclampsia, malpresentation, placenta praevia) or medical
  - Resources limited or emergency cesarean delivery or patient refusal
  - Note- according to new recommendations (2017), 2 or more LCSC are no more considered absolute indication for VBAC.
  - Women who have had two or more lower segment caesarean deliveries may be offered VBAC after counselling by a senior obstetrician. This should include the risk of uterine rupture and maternal morbidity, and the individual likelihood of successful VBAC (e.g. given a history of prior vaginal delivery).
  - k) Labour should be conducted in a centre with suitable expertise and recourse to immediate surgical delivery."
- 

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## 207. True statement regarding CIN-I is/are?

k) Associated with HPV-16

l) Occurs at squamo-columnar junction of cervix

m) Dysplasia involves 2/3rd of the thickness of the epithelium

n) It is kept under observation with PAP smear or HPV DNA tests

o) Disappears spontaneously in 60% percentage of females in 1-2 years

Correct Answer - A:B:D:E

**Ans. is 'a' i.e., Associated with HPV-16, 'b' i.e., Occurs at squamo-columnar junction of cervix, 'd' i.e., It is kept under observation with PAP smear or HPV DNA tests & 'e' i.e., Disappears spontaneously in 60% percentage of females in 1-2 years**

Cervical intraepithelial neoplasia (CIN) (cervical dysplasia)

CIN refers to the potentially premalignant transformation of cells of the cervix.

**Site:**

- Squamo-columnar junction (SCI) of the cervix (most common), vaginal walls and vulvar epithelium.

**Etiology:**

- Chronic Human papilloma virus (HPV): high risk type of HPV are 16, 18, 31, or 33

**Risk factors:**

- Immunodeficiency
- Women who give birth before age 17/ are sexually active before age 18
- Poor diet, multiple sexual partners, lack of condom use, and



cigarette smoking

**Diagnosis:**

- Pap smear (abnormal cells)
- Next step :colposcopy
- Biopsy
- DNA test (To detect high risk HPV)

**Treatment:**

**CIN 1:**

- No treatment required
- Left untreated, about 60-70% of CIN-1 will regress within one year, and 90% will regress within two years

**Higher-grade CIN:**

- Cryocautery, electrocautery, laser cautery, loop electrical excision procedure (LEEP), or cervical conization.

**Simple hysterectomy (abdominal/vaginal):**

- CIN persists or does not improve after other procedures
- If family is complete
- Associated prolapse or fibroid or when the patient is not ready for regular follow-up.

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## 208. Indications of Karyotyping include?

- 26. Recurrent abortions
- 27. Multiple malformations in child
- 28. Delayed puberty
- 29. Advanced maternal age
- 30. All of the above

Correct Answer - E

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

### **INDICATIONS FOR KARYOTYPING:**

#### **Prenatal period:**

- Advanced maternal age
- Balanced chromosomal rearrangement (translocation, inversion) or not (marker, mosaicism, sexual aneuploidy) in one of the parents
- Previous pregnancy with an abnormal chromosomal complement
- Previous stillbirth with an abnormal chromosomal complement
- Abnormal maternal serological screening test
- Abnormal foetal ultrasound
- Risk of an unstable chromosomal syndrome

#### **Perinatal Period:**

- In a still birth

#### **Postnatal Period:**

- Confirmation of clinical Analysis
- Ambiguous genitalia
- Congenital dysmorphic syndromes and /or Malformations and/or neurological deficit
- Pseudohermaphroditism (male /female)
- Gonadal dysgenesis

◦ True hermaphrodite

**Childhood & adolescence:**

- Developmental delay (array testing preferred)
- Delayed puberty or inappropriate secondary sexual development
- Psycho motor retardation (fragile X, Klinefelter)
- Dysmorphism with visceral anomalies undetected during infancy
- Unexplained short stature (Turner)
- Hypogonadism (Klinefelter, Turner).
  - Chromosome breakage syndromes: ataxia telangiectasia, Bloom syndrome, Fanconi anaemia and Nijmegen breakage syndrome.

**Adult:**

- History of pregnancy loss
- Parents of a child with a chromosomal disorder
- Infertility/Sterility workup once gynecological or endocrine causes have been ruled out (Klinefelter, Turner).
- Testicular feminization syndrome

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**g) TRUE statement regarding pre-natal aneuploidy screening is?**

k) AFP is tested in Down syndrome

l) Nuchal translucency is seen at 10-12 weeks

m) Anomaly scan is done at 12-16 weeks

n) Triple marker test is done at 15 - 22 weeks

o) Quadruple marker test is done at 10- 12 weeks

Correct Answer - A:B:D

**Ans. is 'a' i.e., AFP is tested in Down syndrome, 'b' i.e., Nuchal translucency is seen at 10-12 weeks & 'd' i.e., Triple marker test is done at 15 — 22 weeks**

**Screening methods to detect aneuploidy:**

- Combinations of first-trimester and second-trimester screening yield Down syndrome detection rates as high as 90 to 95%. First trimester screening (11-14 weeks)

**Combined first trimester screening:**

- PAPP(Pregnancy associated plasma protein -A) at 9 weeks

**Nuchal translucency (NT):**

- 11-13 weeks
- Marker for Down syndrome
- Serum hCG at 12 weeks
- In cases of fetal Down syndrome: Serum free Beta-hCG level is higher approximately 2.0 MoM and the PAPP-A level is lower, approximately 0.5 MoM.
- With trisomy 18 and trisomy 13, levels of both analytes are lower.

**Second trimester screening (15-22 weeks)**

- 15 weeks & 22 weeks
- MSAFP: low level are found in down syndrome
- **Triple test:**
- Includes MSAFP, hCG& uE3 (unconjugated estriol).
- Detection of down syndrome.
- In an affected pregnancy, levels of MSAFP & uE3 tend to low while that of hCG is high
- **Quadruple (Quad) screening:**
- MSAFP, hCG, uE3 & dimeric inhibin -A.
- Detect trisomy 21 in 85% cases.
- Level of serum analytes in cases with trisomy 21: MSAFP -reduced, hCG-increased, uE3-reduced& dimeric inhibinA-elevated.
- **Anomaly scan**
- Anatomy scan, 18-22 weeks ultrasound, or level 2 ultrasound)
- **Includes:**
- Fetal number, including number of amniotic sacs and chorionic sacs for multiple gestations
- Fetal cardiac activity
- Fetal position relative to the uterus and cervix
- Location and appearance of the placenta, including site of umbilical cord insertion when possible
- Amniotic fluid volume
- Gestational age assessment
- Fetal weight estimation
- Fetal anatomical survey
- Evaluation of the maternal uterus, tubes, ovaries, and surrounding structures when appropriate

## 24. Best predictors of estimation of gestational age is/are?

- k) Biparietal diameter at age of 18 weeks
- l) Crown rump length at age of 7-10 weeks
- m) Crown rump length at age of 11-14 weeks
- n) Gestational sac diameter at 5-6 weeks
- o) Crown rump length at age of 14-18 weeks

Correct Answer - A:B:D

**Ans. is 'a' i.e., Biparietal diameter at age of 18 weeks, 'b' i.e., Crown rump length at age of 7-10 weeks & 'd' i.e., Gestational sac diameter at 5-6 weeks**

### FIRST TRIMESTER

#### Fetal anatomy and viability:

#### Mean Sac Diameter (MSD)

5–8 mm

12 mm

15–18 mm

Embryo CRL > 4 mm

#### Findings

Yolk sac

Embryo

Cardiac activity

Cardiac activity

#### Gestational age and Embryonic Structures:

#### Menstrual Age

4 weeks

9 weeks

6 weeks

7 weeks

#### Fetal Structures

Choriodecidual thickness,?  
chorionic sac

Gestation sac, embryo yolk  
sac Fetal pole, cardiac activity

Lower limb buds, midgut?  
herniation (physiological)

8 weeks

Upper limb buds, stomach

9 weeks

Spine, choroid plexus

## **SECOND TRIMESTER**

### **Fetal growth:**

- Normal: 10th-90th percentiles
- **Biparietal diameter (BPD): (12 week )** Outer skull edge of proximal skull to inner edge on distal skull
- Head circumference (HC)
- Abdominal circumference (AC): Measured at junction of left and right portal veins & umbilical vein
- Femur length (FL): Measured when beam from the transducer is perpendicular to the shaft
- Birthweight (**BW**)
- Hadlock formula :  
$$\log(10)BW = 1.335 - 0.0034(AC)(FL) + 0.0316(BPD) + 0.0457(AC) + 0.1623(FL)$$

### **Gestational age assessment:**

- Optimum time for most **accurate assessment : 14 -20 weeks by Crown rump length**
- Transcerebellar diameter (TCD): 14 weeks- 28 weeks

Dating ultrasound done before 22 weeks should be used in preference to menstrual dates

## **THIRD TRIMESTER:**

**Estimated fetal weight (EFW) is determined from the average of three readings for:**

- FL
- AC is most important.
- BPD.

#### 4. Pregnancy is contraindicated in which heart disease?

29. Eisenmenger syndrome

30. Multi valvular disease

31. Congenital heart disease

32. Coarctation of aorta

33. Ejection fraction < 40%

Correct Answer - A:D:E

**Ans. is 'a' i.e., Eisenmenger syndrome, 'd' i.e., Coarctation of aorta & 'e' i.e., Ejection fraction < 40%**

**Heart diseases in which pregnancy is contraindicated :**

- Marfan syndrome
- Aortic disease with dilatation of > 50mm with bicuspid aortic valve.
- Coarctation of aorta
- Eisenmenger syndrome
- Severe fixed obstructive lesions ( aortic stenosis, mitral stenosis, pulmonic stenosis, hypertrophic obstructive cardiomyopathy)
- NYHA class 3 & 4 heart diseases (severe systemic ventricular dysfunction/CHF)
- Ejection fraction < 30-40%
- Previous peripartum cardiomyopathy with any residual impairment of LV function
- Pulmonary arterial hypertension of any cause
- Severe cyanosis



**g) A female with IUCD develops pelvic inflammatory disease. which of the following should be done:**

30. Keep the IUCD, give antibiotic, follow up for antibiotic response & then take decision regarding IUCD removal

31. Start antibiotic & remove IUCD

32. Remove IUCD & start antibiotic

33. Wait for next menstrual cycle for any intervention

34. Do nothing

Correct Answer - A

**Ans. is 'a' i.e., Keep the IUCD, give antibiotic, follow up for antibiotic response & then take decision regarding IUCD removal**

- If an IUD user receives a diagnosis of PID, the IUD does not need to be removed. However, the woman should receive treatment according to these recommendations and should have close clinical follow-up no clinical improvement occurs within 48-72 hours of initiating treatment, providers should consider removing the IUD. • PID treatment regimens must provide empiric, broad spectrum antibiotic coverage of likely pathogens

## g) Treatment of cervical incompetence includes?

k) Shirodkar's stitch

l) Mc donald's stitch

m) B lynch stitch

n) Fothergills operation

o) Sling operation

Correct Answer - A:B

**Ans. is 'a' i.e., Shirodkar's stitch & 'b' i.e., Mcdonald's stitch**

### **TREATMENT OF CERVICAL INCOMPETENCY:**

#### **Surgical:**

#### **Transvaginal techniques**

- McDonald cerclage: purse-string suture that passes through the cervical stroma
- Shirodkar cerclage :requires dissection of the bladder anteriorly and the rectum posteriorly in order to place the stitch at the level of the internal os.
- Transabdominal cerclage (Benson & Durfee cerclage): Indicated in
  - Anatomic limitations (eg, after trachelectomy)
  - Congenital short cervix
  - History of failure of a transvaginal cerclage.
  - Incompetent cervix.

#### **About other options**

- . B lynch stitch – compression sutures to control PPH
- . Fothergills operation – surgical treatment of uterine prolapse
- . Sling operation – synthetic tapes used to support uterus in 2<sup>nd</sup> and

3<sup>rd</sup> degree uterine prolapse

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## 214. Langerhan's cells are reduced in?

32. Oral lichen planus

33. Basal cell carcinoma

34. Contact dermatitis

35. Langerhan's cell histiocytosis

36. Sarcoidosis

Correct Answer - B:E

**Ans. is'b'i.e. Basal cell carcinoma &'e'i.e. Sarcoidosis** Ref:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3424941/>:

<https://www.ncbi.nlm.nih.gov/pubmed/24691282>: <https://www.ncbi.nlm.nih.gov/pubmed/24691282>

"Langerhans cells play a role in cell-mediated immune reactions which are often depressed in sarcoidosis".

- "We have shown that the number of Langerhans cells is considerably lower in cutaneous basal and squamous cell carcinomas, compared with their number in the normal skin.

**Reduced in,**

- Ageing
- Basal cell carcinoma skin
- Squamous cell carcinoma skin
- Sarcoidosis
- HIV/AIDS
- HPV infection
- Lichenoid drug eruptions

**Increased in,**

- Gingivitis and periodontitis
- Oral LP
- Contact hypersensitivity

- Recurrent aphthous stomatitis
  - Behcet's disease
  - Oral cancers
  - Langerhans cell histiocytosis ( LCH )
- 

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**g) Which of the following not a sub-type of lichen planus?**

k) Lichen planus hypertrophicus

l) Lichen planus pigmentosus

m) Ulcerative lichen planus

n) Lichen nitidus

o) Lichen scrofulosorum

Correct Answer - D:E

**Ans. is 'd'i.e., Lichen nitidus &'e' i.e. Lichen scrofulosorum**

Ref: Neena Khanna 3'd/e p. 52-53; Behl I\$h/e p.265; Rook Vhelp. 5.13; IADVL textbook of dermatology 3'd /e p.1070; en.wikipedia.org

**Forms:**

- Annular, Linear, Hvoerlroohic, Atrophic, Bullous, Pigmented.

**Overlap syndromes:**

- Lupus erythematosus overlap syndrome.
- Lichen sclerosus overlap syndrome,

**Other variants of cutaneous LP mav include:**

- Lichen planus pemphigoides
- Keratosis lichenoides chronica ("Nekam's disease")
- Lichenoil keratosis (Benign lichenoid keratosis/Solitary lichen planus)
- Lichenoid dermatitis.

**Lichen nitidus:**

- Uncommon inflammatory skin condition that usually presents with tiny skin-coloured bumps in children.
- Although it has been considered a variant of lichen planus.

- Lichen nitidus is now believed to be a separate and distinct entity!  
**Lichen scrofulosorum (tuberculosis cutis lichenoides):**
  - Rare tuberculid that presents as a lichenoid eruption of minute papules in **children and adolescents with tuberculosis.**
- 

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## 216. Nail changes in psoriasis include?

. Pitting

. Pterygium formation

. Subungual hyperkeratosis

. Thinning of nails

. Oil spots

Correct Answer - A:C:E

**Ans. is 'a' i.e., Pitting, 'c' i.e. Subungual hyperkeratosis & 'e' i.e. Oil spots**

Ref: Neena Khanna 4th/e p. 40-42; Roxburgh p. 128-42; Venkataram little p. 49)

- Associated clinical features in psoriasis
- Nail changes
- Occurs in 10-50% of patients.
- **The characteristic changes are : -**
- Pitting (thimble pitting) > Most common nail change.
- Other changes > Oil spots, nail plate thickening, Subungual hyperkeratosis, Onycholysis, Yellow-brown discoloration



## 217. "Facies leprosa" is characterized by?

- . Madarosis
- . Resorption of anterior nasal spine
- . Collapse of nasal bridge
- . Loss of upper incisors
- . Diffuse infiltration of face

Correct Answer - B:D

**Ans. is 'b' i.e., Resorption of anterior nasal spine & 'd' i.e. Loss of upper incisors** Ref, <https://www.ncbi.nlm.nih.gov/pubmed/3268520?adopt=Abstract>: <http://ila.ilst.br/pdfs/v56n1a03.pdf> • Note- other mentioned facial features are also seen in leprosy but they are not included in term 'Facies leprosa'.

### **Facies leprosa:**

- Facies leprosa is a term used to describe resorption of bone in the facial region of patients with leprosy, was first introduced by Moller-Christensen and colleagues.
- It is characterized by a combination of nasal change and resorption of nasal bone, anterior nasal spine, supra-incisive alveolar region and anterior alveolar process of the maxillae, associated with the loss of upper incisors teeth, according to the criteria of radiographic interpretation.

### **Other facial features of leprosy**

- Nodules with predilection for external ears.
- Madarosis (loss of lashes and eyebrows).
- Saddle Nose (Collapse of the nasal bridge) and perforation of palate.
- Testicular involvement results in loss of testicular sensation, loss of

- libido, impotence & gynaecomastia.
  - Leonine Face (Diffuse dermal infiltration of face).
- 

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### 30. All the following are causes of scarring alopecia except?

k) Lichen planus

l) Tinea capitis

m) DLE

n) Sarcoidosis

o) Trichotillomania

Correct Answer - B:E

**Ans. is'b'i.e., Tinea capitis &'e'i.e., Trichotillomania**

[Ref Neena Kenna p. 141; Harrison 19/e p. 355 ; Roxburgh 17/e p. 270

**Causes of Scarring alopecia (Cicatricial alopecia):**

**Local causes:**

- Cutaneous Lupus(DLE)
- Lichen Planus
- Folliculitis decalvans
- Linear scleroderma (Morphea)
- radiation
- Central centrifugal cicatricial alopecia
- Alopecia cutis
- Congenital atrichia

**Systemic causes:**

- SLE
- Sarcoidosis
- Cutaneous Metastasis
- Cicatricial alopecia is also known as pseudopelade.

- Note - Most common congenital cicatricial alopecia is cutis congenita i.e., focal absence of epidermis with or without other layers.

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## 219. Painful genital ulcers are seen in?

35. Syphilis

36. Chancroid

37. LGV

38. Herpes genitalis

39. Granuloma inguinale

Correct Answer - B:D

**Ans' is'b'i.e., Chancroid &'d'i.e., Herpes genitalis** Ref,

Neena Khanna 3d/e p. 259-60; Khopkar # /e p. 232

- Primary syphilis (hard chancre)
- Donovanosis (Granuloma inguinale)
- Chancroid (soft chancre)
- LGV
- Herpes genitalis

## 220. Skin hazards of swimming are ?

k) Pyoderma gangrenosum

l) Verrucae

m) Mmarinum infection

n) Mulcerans infection

o) Shigella

Correct Answer - B:C:E

**Ans. is 'b' i.e. Verrucae, 'c' i.e., M marinum infection**

- "Large outbreaks of infection due to *M. marinum* have been described in association with swimming pools (swimming pool granuloma) and fish tanks (fish tank granuloma)"
- "Verrucas, like most warts, are due to a viral infection of the growing layers of the skin.
- They get in when the skin is injured in some way.
- This is especially the case for barefoot activities surrounding swimming pools.
- The plantar skin on the base of the feet gets soggy) and is more easily damaged.
- *Shigella* is transmitted directly or indirectly via the fecal-oral route and may occur due to the ingestion of contaminated food or water.
- Of great significance is the low infective dose of between 10-100 organisms.
- This disease may be acquired by swimming in contaminated surface waters or pools and spa.

|

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**k) A patient, planned for cesarean section, develops hypotension 8 minutes after the spinal anesthesia. Drugs which can be used to treat this are?**

33. Ephedrine

34. Mephenteramine

35. Adrenaline

36. Dopamine

37. Steroids

Correct Answer - A:B:C:D

**Ans. is 'a' i.e., Ephedrine, 'b' i.e., Mephenteramine, 'c' i.e., Phenylephrine & 'd' i.e. Dopamine**

[Ref: Miller Vh/e p. 1617]

**Managing hypotension induced by spinal anesthesia for caesarean section:**

**Treatment**

- In spite of using all the prophylactic measures, 40% to 60% of patients will still need treatment for hypotension:-
  - k) Fluid loading is superior to no-fluid regimen; however, the incidence of PSH is still high with all fluid loading protocols
  - l) Vasopressors:-
    - Phenylephrine (PE) is preferred vasopressor.
    - Prevention and treatment of PSH because of faster onset.
    - Ephedrine may be more beneficial in patients with bradycardia. •
- Norepinephrine infusion was recently investigated as an alternative for prophylaxis of PSH.



- Ondansetron was reported as a prophylactic drug from PSH
  - Other sympathomimetic drugs used are mephentermine, metaraminol, methoxamine, dopamine and, angiotensin II
  - Atropine should be given for bradycardia
- 

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- . **In comparison to IJV cannulation, true about subclavian vein cannulation is/are?**

- . More chances of pneumothorax
- . More incidence of catheter malposition
- . More infectious complications
- . More safety in ultrasound guided technique
- . All of the above

Correct Answer - A:B

**Ans. is'a'i.e., More chances of pneumothorax &'b'i.e., More incidence of catheter malposition**

[Ref: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1270925/>]

- Subclavian vein cannulation
- Good external landmarks
- Large radius
- Practical method of central line in cardio-respiratory arrest
- Blind procedure
- Ultrasound not much useful
- Should not be attempted in children < 2 years
- Unable to compress bleeding vessels
- **More common & frequent:** Catheter malposition, Pneumothorax, hemothorax, Pinch-off syndrome.
- **Less common & frequent:** Arterial puncture, Thrombosis, infectious complications.

### 38. Which of the following anesthetic should not be used in a patient of chronic renal failure?

i) Methoxyflurane

j) Ketamine

k) Pancuronium

l) Succinylcholine

m) Desflurane

Correct Answer - A:B:C

**Ans. is 'a' i.e., Methoxyflurane, 'b' i.e., Ketamine & 'c' i.e., Pancuronium**

[Ref: Morgan 4th/e p. 219]

#### **Muscle relaxants**

- Atracurium/cisatracurium are the muscle relaxant of choice as their elimination is not dependent on kidney.
- Mivacurium is an alternative as its elimination is also independent of kidney.
- Gallamine and metocurine are entirely dependent on renal excretion for elimination) Contraindicated in renal disease .
- Pancuronium, pipecurium, Alcuronium and doxacurium are Primarily dependent on renal excretion, however neuromuscular function should be closely monitored if these agents are used in Patients with abnormal renal function.
- Vecuronium and Rocuronium are primarily excreted in Bile (hepatic elimination) but some amount is eliminated in urine also.
- So, only three non-depolarizing blockers have no elimination through

- kidney:- Atracurium, Cisatracurium, Mivacurium
- Succinylcholine (depolarizing blocker) is also independent of renal excretion for elimination.
  - It can be safely used in the presence of renal failure, provided serum potassium concentration is less than 5 mg/L.
- 

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## 224. True regarding local anesthetics is/are?

- a) Prilocaine is longer acting than bupivacaine
- b) Tetracaine is more potent than lignocaine
- c) Dibucaine is the longest acting local anesthetic
- d) Bupivacaine can produce cardiotoxicity
- e) Cocaine can produce hypotension

Correct Answer - B:C:D

**Ans. is 'b' i.e., Tetracaine is more potent than lignocaine, 'c' i.e., Dibucaine is the longest acting local anesthetic & 'd' i.e., Bupivacaine can produce cardiotoxicity**

[Ref: Morgan 4th/e p. 266-270, 926; Ajay Yadav 4th/e p. 118; Essential of anaesthesia 4th/e p. 116; Goodman & Gilman 11th/e p. 375]

- Chloroprocaine is the shortest acting LA.
- Dibucaine is the longest acting, most potent and most toxic LA.
- Procaine & chloroprocaine are least potent LAs.
- Bupivacaine is the most cardiotoxic LA (Ropivacaine is a newer bupivacaine congener with less cardiotoxicity).
- Levobupivacaine (The S (-) enantiomer of bupivacaine) is less cardiotoxic and less prone to cause seizure.
- Prilocaine and Benzocaine can cause Methemoglobinemia.
- Lignocaine is the most commonly used LA. • Bupivacaine has the highest local tissue irritancy
- Chloroprocaine is contraindicated in spinal anaesthesia as it can cause paraplegia due to the presence of neurotoxic preservative sodium metabisulphite.
- Procaine is the LA of choice in malignant hyperthermia.

|

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**225. If you are asked to collect 4 serial samples from lumbar puncture. What should be done with first sample?**

- a) Cell counts like differential counts
- b) Biochemical tests [protein & glucose etc
- c) Bacterial culture and gram staining
- d) Mycobacterial & fungal culture and staining
- e) None of the above-discard the sample

Correct Answer - A

**Ans. is'a'i.e., Cell counts like differential counts**

Ref: <https://emedicine.medscape.com/article/80773-technique>

**The classic approach is to send the 4 CSF tubes for the following studies:**

- . Tube 1 - Cell count and differential .
- . Tube 2 - Glucose and protein levels
- . Tube 3 - Gram stain, culture and sensitivity (C&S)
- . Tube 4 - Cell count and differential

## 226. TRUE statement regarding inhalational anesthesia is/ are?

- a) Sevoflurane is the agent of choice for children and asthma patients
- b) Sevoflurane should not be used where the gas flow rate is less than 2 L/min
- c) Desflurane should not be used for induction in children
- d) Isoflurane is more potent than sevoflurane
- e) Halothane is the agent of choice for day care surgery

Correct Answer - A:B:C:D

**Ans. is 'a' i.e., Sevoflurane is the agent of choice for children and asthma patients, 'b' i.e., Sevoflurane should not be used where the gas flow rate is less than 2 L/min, 'c' i.e., Desflurane should not be used for induction in children & 'd' i.e., Isoflurane is more potent than sevoflurane**

[Ref: Ajay Yadav Sth/e p. 70-87; Morgan Sth/e p. 163-70]

- "In June 1995' the Food and Drug Administration (FDA) approved the clinical use of sevoflurane. but with a warning that not used at fresh gas flows less than 2 l/min because sufficient data had not been presented to establish its safety in that circumstance.
- The FDA was concerned that sevoflurane may cause adverse renal effects at low flows because it is degraded by the strong bases in CO<sub>2</sub> absorbents to fluoromethyl-2,2-difluoro-1-(trifluoromethyl) vinyl ether (compound A).  
-<http://anesthesiologit.pubs.asahq.org/article.aspx?articleid=2026924>



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**227. 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.

## 228. Natural radio-isotopes are?

a) Radium 226

b) Cesium 137

c) Strontium 90

d) Iridium 192

e) Cobalt 60

Correct Answer - A:B:C

**Ans. is 'a' i.e., Radium 226, 'b' i.e., Cesium 137 & 'c' i.e., Strontium 90**

[Rel <https://www.britannica.com/science/radioactive-isotope>; <https://www.chemicool.com/examples/natural-radioactive-elements.html>]

### **Natural sources of radiation (Background radiation)**

- Hydrogen (H-3), beryllium (Be-10), carbon (C-14), radium (Ra-226), Radon (Rn-222), cesium (Cs-137), sodium (Na-22), silicon (Si-32), chlorine (Cl-36), argon (Ar-39), krypton (Kr-81, Kr-78), iodine (I-129, I-131), potassium (K-40), strontium (Sr-90), calcium (Ca-48), germanium (Ge-76), zirconium (Zr-96), samarium (Sm-147, Sm-148), selenium (Se-82), rubidium (Rb-87), molybdenum (Mo-100), cadmium (Cd-113, Cd-115), xenon (Xe-136), barium (Ba-130), gadolinium (Gd-152), tungsten (W-180), platinum (Pt-190), bismuth (Bi-209), thorium (Th-232, Th-230) and uranium (U-235, U-238, U-234)

## 229. Posterior urethral valves in children/infants are diagnosed by?

a) CT

b) HRCT

c) Prenatal ultrasound

d) Postnatal ultrasound

e) Micturating cystourethrography

Correct Answer - C:D:E

**Ans. is 'c' i.e., Prenatal ultrasound, 'd' i.e., Postnatal ultrasound & 'e' i.e., Micturating cystourethrography**

[Ref Clinical pediatric nephrology 3dlet p 94; Nekon 18th/e p. 2241]

- **Radiographic investigations for Posterior urethral valves (PUVs)**
  - **Ultrasound**
    - A. Antenatal ultrasound
    - B. Postnatal ultrasound
    - C. Voiding cystourethrogram (VCUG\ best imaging technique)

## 230. Radiological tests which are used to see white matter of brain are?

a) Skull X-ray

b) CT

c) PET

d) MRI

e) Magnetic Resonance Spectroscopy

Correct Answer - A:B:C:D:E

**Ans. is 'All' i.e., (a, b, c, d & e)**

[Ref [www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov)]

- 'Skull x-rays were historical useful and capable of identifying the gyriform calcification of the subcortical white matter although they no longer play a significant role in the diagnosis or management of this condition.
- The finding usually becomes evident between 2 and 7 years of age" • White matter disease imaging
- Investigation of choice for white matter disease > MRI (CT is second choice).

## 231. Claw sign on radiography is seen in?

a) Ileocolic TB

b) Ischemic colitis

c) Crohn's disease

d) Ulcerative colitis

e) Intussusceptions

Correct Answer - E

**Ans. is 'e' i.e., Intussusceptions**

[Ref [www.ncbi.nlm.nih.gov/](http://www.ncbi.nlm.nih.gov/)]

- Radiological signs of intussusceptions
- Claw sign
- Meniscus sign
- Empty right iliac fossa
- Coiled spring sign
- Pincer sign

## 232. Radiological signs of NF-1 include?

a) Scoliosis

b) Widening of intercostal space

c) Posterior vertebral scalloping

d) Sphenoid wing dysplasia

e) Narrowing of neural foramina

Correct Answer - A:C:D

**Ans. is 'a' i.e., Scoliosis, 'c' i.e., Posterior vertebral scalloping & 'd' i.e., Sphenoid wing dysplasia**

[Ref: <https://radio-pedia.org/articles/neurofibromatosis-type-1>]

### **Radiographic features of NF 1**

- Progressive sphenoid. wing dysplasia
- Kyphoscoliosis
- Posterior vestibular scalloping

### 233. Teletherapy uses?

a) Electron

b) X-rays

c) Gamma rays

d) Beta rays

e) Protons/neutron

Correct Answer - A:B:C:E

**Ans. is 'a' i.e., Electron, 'b' i.e., X-rays, 'c' i.e., Gamma rays & (e' i.e., Protons/neutrons**

[Ref: Radiotherapy & brachyther-apy by Alessandra caner p. 19; Radiation physics p. 210-217; Sumer Sethi &/e p. 177, 184] ■

External beam radiotherapy (EBRT) or Teletherapy: -

**In teletherapy the source of radiation is distant from the patient.**

**Teletherapy may be given by the following :**

- . X-rays beams (Linear acceleration)
- . Gamma rays: - Cobalt - 60 beam or Cesium-137.
- . Particulate beams



## 234. Dose rate in linear accelerator is measured as ?

a) Rads/minute

b) Rads/second

c) Roentgen/second

d) Curie/minute

e) None

Correct Answer - A

**Ans. is'a'i.e., Rads/minute**

[Ref, Innovation in radiation oncology p. 100)

- The dose rate in teletherapy (including linear accelerator) is measured in monitor unit or rad per minute,
- A monitor unit is a measure of machine output from a clinical accelerator for radiation therapy such as linear accelerator or an orthovoltage unit.

**235. True about suicide attempts are all except ?**

a) Hopelessness is one of the important predictor

b) Same as parasuicide

c) Increased risk with substance abuse

d) Commonly seen in young male

e) None

Correct Answer - B:D

**Ans. is 'b' i.e., same as parasuicide & 'd' i.e., commonly seen in young male**

- Feeling of Hopelessness and loneliness are present in most of the suicide attempts.
- Parasuicide is non-suicidal self injury.
- Substance abuse is a risk factor for suicide.
- Suicidal attempts are more common in females (suicides are more common in males).

**236. A patient with paranoid schizophrenia**

**talks about 'omnimicro', but he is unable to explain it in detail and reach a conclusion. He often repeats last syllable of one word of last sentence. This can be related to -**

a) Circumstantiality

b) Neologism

c) Preservation

d) Knight's movement

e) Logoclonia

Correct Answer - C:E

**Ans. is 'c' i.e., Preservation & 'e' i.e., Logoclonia**

Ref: Textbook of Marketing Psychiatry p. 319)

**Perseveration:**

- Continuing with a verbal response which was initially appropriate, However, thereafter there is persistent and inappropriate repetition of the same verbal response. There is out of context repetition of words, phrases, ideas or points even after it has been dealt with exhaustively or the listener has tried to change the subject.

Perseveration affects speech and it got two forms:

**Logoclonia:**

- Last syllable of the last word is repeated, eg. I am well today ay ay ay ay

**Palilalia:**

- Repeated word is perseverate with increasing frequency.
- There is repetition of words and phrases rather than syllable.

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## 237. Mania does not include?

a) Delusion of grandeur

b) Delusion of guilt

c) Delusion of persecution

d) Delusion of reference

e) Delusion of infidelity

Correct Answer - B:E

**Ans. is 'b' i.e., Delusion of guilt & 'e' i.e., Delusion of infidelity**

Ref: Niraj Ahuja p. 69-71; Kaplan & Saddock p. 358, 64-71

### **Symptoms of mania:**

- Mania is antipodal to depression and its symptoms are a mirror image of those of depression.
- The classical triad of symptoms includes elated mood, pressure of speech, and increased psychomotor activity.

### **Important sign and symptoms of mania are : -**

- Elevated mood: - Euphoria (mild elevation), Elation, (moderate elevation), Exaltation (severe elevation), Ecstasy (Very severe elevation). Mood may become irritable, if person is stopped from doing what he wants.
- Thought & speech: - Pressure of speech (rapid talk, over-talkative), flight of ideas, delusion of grandeur, delusion of persecution secondary to delusion of grandeur (e.g., person thinks that people are against me because I am so great), delusion of reference, delusion of love (erotomania), Distractibility. There is high self esteem.
- Increased psychomotor activity: - Over activeness, restlessness, increased energy, there is no time for rest.

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## 238. Which of the following is NOT associated with antisocial personality?

a) No feeling of guilt

b) Unstable and intense interpersonal relationship

c) No care about feeling of other

d) Recurrent suicidal threats

e) Disrupted self image

Correct Answer - B:D

**Ans. is 'b' i.e., Unstable and intense interpersonal relationship & 'd' i.e., Recurrent suicidal threats**

Ref Niraj Ahuja 6th/e p. 122; Essentials of clinical psychiatry 4th/e p. 878; Namboodiri/e p. 305)

- These two are associated with borderline personality disorder.
- **Antisocial (Dissocial) personality disorder:**
- The essential features of antisocial personality disorder are a disregard for and violation of the rights of the other and the rules of the society.
- It is characterized by repeated violation of the law and rules of the society:
- Patient with antisocial personality disorder may have criminal behaviour, homicide, sexual offences and drug abuse.
- Physical aggressiveness
- Reckless disregard for safety of self or others; Consistent irresponsibility in work and family environment and lack of remorse.
- This disorder is synonymous with previously used terms /like psychopath or sociopath.

- Antisocial personality disorder impairs a person's ability to care about the feelings and needs of others. They may not feel empathy or guilt.

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## 239. Which of the following is not a paraphilia?

a) Adultery

b) Masochism

c) Exhibitionism

d) Frotteurism

e) Lesbianism

Correct Answer - A:E

**Ans. is 'a' i.e., Adultery & 'e' i.e., Lesbianism**

Ref: Parikh fi/e p. 411-12; Reddy 32th/e p. 411; Niraj Ahuja Vh/e p. 124; wikipedia.org

### **Paraphilias - Old definition**

- A paraphilia is a condition in which a person's sexual arousal and gratification depend on fantasizing about and engaging in sexual behavior that is atypical and extreme.
  - Thus all sexual perturbations and unnatural sexual offences (e.g. homosexuality, bestiality etc.) are paraphilias.
  - The DSM-5 acknowledges that many dozens of paraphilias exist, but only has specific listings for eight that are forensically important and relatively common.
  - These are voyeuristic disorder, exhibitionistic disorder, frotteuristic disorder, sexual masochism disorder, sexual sadism disorder, pedophilic disorder, fetishistic disorder, and transvestic disorder.
- Homosexual behavior gay & lesbianism is longer considered as "Paraphilias".

## 240. Most common psychiatric disorder after trauma/ stress?

a) Major depression

b) Mania

c) Schizophrenia

d) PTSD

e) Acute stress disorder

Correct Answer - D:E

**Ans. is 'd' i.e., PTSD & 'e' i.e., Acute stress reaction**

[Ref: Niraj Ahuja p. 111-12; Kaplan & Saddock p.437-40]

**Stress disorders:**

- Stress disorder is the condition marked by the development of symptoms after exposure to traumatic life event.
- The person reacts to this experience with fear and helplessness, persistently relives the event, and tries to avoid being reminded of it.

**Stress disorder may be : -**

- Post - traumatic stress disorder (PTSD): - Symptoms lasts for more than a month,
- Acute stress disorder: - Symptoms last for less than 4 weeks

## 241. Which vitamin deficiency causes dementia:

a) Vitamin A

b) Vitamin C

c) Vitamin B12

d) Vitamin B1

e) Nicotinic acid

Correct Answer - C:D:E

**Ans. is 'c' i.e., Vitamin B 12, 'd' i.e., Vitamin B 1 & 'e' i.e., Nicotinic acid**

Ref: Dementia by Brown and Hillan l't/e p. 57

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3428233/>

- The B-vitamins, including vitamins B12, B6, B1, B2, niacin (B3) and folate (B9), have been implicated as Protective risk factors against cognitive decline and Alzheimer's disease.
- Of all the B-vitamins, vitamin B12, niacin, and thiamine have the most clearly established relations with deterioration in mental state"

## 242. Defence mechanism in obsessive compulsive disorder is/are:

a) Undoing

b) Conversion

c) Reaction formation

d) Isolation of affect

e) Projection

Correct Answer - A:C:D

**Ans. is'a'i.e., Undoing,'c'i.e., Reaction formation &'d'i.e., Isolation of affect**

Ref: Niraj Ahuja p. 97, 208-210; Kaplan & Sadock p.161-

- 62 ■ Important diseases and their defence mechanisms
- **Obsessive compulsive disease:** Reaction Formation. displacement, undoing, isolation of affect, repression inhibition.
  - Phobia: - Displacement, inhibition.
  - Conversion disorder (Hysteria): - Conversion.
  - Persecutory delusions and hallucinations: - Projection.
  - Neuroses (neurotic reaction) : - Regression to an earlier state, Failure of repression

## 243. Beck's cognitive triad of depression includes?

a) Self

b) Future

c) Past experience

d) World & environment

e) Others

Correct Answer - A:B:D

**Ans. is 'a' i.e., Self, 'b' i.e., Future & 'd' i.e., World and environment**

[Ref: Kaplan & Saddock p.355; various sites internet]

- Beck's cognitive theory of depression (1976)
- Aaron Beck studied people suffering from depression and found that they appraised events in a negative way.
- Beck identified three mechanisms that he thought were responsible for depression:
  - The cognitive triad. (of negative automatic thinking)
  - Negative self schemas
  - Errors in Logic (i.e. faulty information processing)

invalid question id