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ANATOMY Chapterwise questions of 1st and 2nd semester (Brought to you by ALL INDIA DSO)

SUPERIOR EXTREMITY

LONG QUESTION(12MARKS)

1.Describe the median nerve under following headings

a.Root value b. Course c.Branching d. Pointing index finger. e. Carpal tunnel syndrome.1+4+3+2+2(MMC)

2.Enumerate the branches of brachial artery. Name the structures piercings the inter muscular septum of arm. write distribution of various groups of axillary lymph nodes with their different afferent and efferent channels.W hat is retro-mammary space and ligament of Cooper?2+1+1+4+2+2(NRS)

3.Describe wrist joint under following heading
A.Type of joints
B.Ligaments
C.Movements and muscle
D.Applied importance

Short answer type(7marks)

1. What is Erbs palsy? Mention the position of the limb in Erbs palsy with explanation 2+5 (IPGMER)

2.Describe the mid-palmar space with its applied importance.(5+2)(BMC)

3. Describe the course and distribution of median nerve in hand. What is carpal tunnel syndrome? (5+2)(BMC)

4.Abduction movement of shoulder joint. 7(BANKURA)

5.Write about Radial Nerve under following heading: origin, course,branches,clinical importance. (1+2+2+2)(CNMC)

6.Describe the lymphatic drainage with clinical importance of mammary gland. 5+2(KPC)

7.What are the palmer spaces ? Describe the thenar muscles with there nerve supply and actions.(NBMCH)

8.A person had an accidental injury inflicted by a broken glass on the medial aspect of the distal part of right forearm. Seven days after successful repair of skin and soft tissue he complained of loss of sensation of ring and little fingers and inability to make a fist. What might be the possible structure that had damaged? Explain the sensory and motor dysfunctions anatomically1+6 (MALDA)

9.What are components of brachial apparatus? Write briefly on development of thyroid gland with deformities of it.(1+4+2)(NRS)

10.What are the different groups of axillary lymph nodes? Give a brief account of the afferent and efferant lymphatics of the axillary lymph nodes(MCK)

11.Name the nerve that may be injured due to fracture of shaft of humerus. Name the muscles supplied by it and teh clinical condition produced after injury.(RGK)

12.A patient presents with diffuse swelling of the palm following pin prick injury in the web space between little and ring finger. Explain anatomically. Describe the boundaries of the area affected.(KALYANI)

Short Notes(3 marks)

1. Mid Palmar space (IPGMER)
2. Carpal tunnel syndrome(BANKURA)
3. Axillary lymph node(BANKURA)
4. Radial Artery(CNMC)
5. Sup radio ulner joint (KPC)
6. Deep Palmar arch(CMSDH)
7. Q angle(MMC)
8. Lumbricals of hand(MCK)
9. First carpo-metacarpal joint (RGK)
10. 3)Lumbricals of hand(RGK)
11. Dinner fork deformity of wrist joint(RGK)
12. Radial nerve injury in radial groove(JOKA)

EXPLAIN WHY(3 MARKS)

1. Ulnar paradox (IPGMER)
2. Peau-de orange appearance of the skin overlying carcinoma of the breast.(MALDA)(BANKURA)
3. Winging of scapula(BMC)
4. Peau d' orange(BMC)
5. Bone pain in case of breast carcinoma(CNMC)
6. Erb's palsy(KPC)(CMSDH)

7. Shoulder joint is the most commonly dislocated major joint.(MMC)
8. Ca breast causes pain along the medial side of arm(MMC)
9. Range of adduction of wrist is more than abduction(NRS)
10. Ulnar claw hand.(MCK)

INFERIOR EXTREMITY

LONG QUESTION(12 MARKS)

1.During a football match a player gets injured after a foul play.A painfull swelling appeared in the inner aspect of his knee joint.On investigation it revealed "unhappy triad of knee joint"

i)Enumerate the components of injury of

ii)Enumerate the bones forming the knee joint and ligaments of knee joint

iii)Eescribe different stages of locking and unlocking movement of knee joint 3+(1+4)+4 (IPGMER)

2.Enumerate the important ligaments of the knee joint. What is the mechanism of locking and unlocking of the knee joint? Mention the main movements of the knee joint and the muscles associated with those movement. 4+4+4(MALDA)

3.Describe the hip joint under the followings: a. Type and subtype, b. Ligaments (names only),c. Movements, d. Muscles causing movements.2+3+4+3 (BMC)

4.An aged man presents with fracture shaft of humerus with wrist drop which nerves involved here ? Write the course and distribution of the nerve in the arm ,forearm and hand. What is the cause of wrist drop ? (1+4+5+2)(BANKURA)

5.Write about the Common Peroneal Nerve under following heading:

Origin,root value,course,disribution and clinical importance.(2+1+3+3+3)(CNMC)

6. Name the joints with type of Inversion & Eversion of foot. Describe the mechanism of the movement. What is the axis of the movement ? Describe the muscles of Inversion & Eversion. 2+4+1+5(KPC)

7. Describe the formation and termination of the Great Saphenous vein ? What are its tributaries ? What are the locations of perforating veins ? What is varicose vein ?(NMBCH)

8.Describe the Hip joints under following headings

d)Formation of the joint.

e)Movements of the joint with axis and muscles responsible for the movements.

f)Clinical aspects of the joint(3+6+3)(CMSDH)

9.Describe the hip joint under following headings

a.Bones and ligaments forming the joint. B.Muscle producing movements C.Coxa vara d.Congenital dislocation of hip.4+4+2+2(MMC)

10. Describe knee joint under following heading

A. Type of joint
B. Ligaments
C. Locking and unlocking muscle and movement
D Bursae around knee joint with clinical importance

11.Describe hip joint under following headings

A. Type of joints and bone involved
B. Ligaments
C. Arterial supply
D. Coxa vara and valga

SHORT ANSWER(7 MARKS)

1. Describe the gross anatomy of the femoral sheath (formation; compartments femoral hernia?) What are its contents? 5+2 (MALDA)
2. What are the arches of foot ? Factors maintaining the medial longitudinal arch of foot?(NBMCH)
3. Name the branches of Femoral nerve. Write short note on saphenous nerve with clinical importance. 2+3+2(NRS)
4. Describe the factors maintaing the medial longitudinal arch of the foot.(MCK)
5. What are locking and unlocking movements of the knee joint?What are the components of unhappy triad?(MSDMCH)
6. Which joints are involved in the movement of inversion and eversion.What are the axis of these movements?enumerate the invertors and evertors of foot? Name the the nerves supplying these muscles.(MSDMCH)
7. Popliteus is the unlocking muscle of the knee joint. Explain anatomically. Describe the mechanism of locking and unlocking of one joint.

SHORT NOTE(3 Marks)

1. Iliotibial tract (IPGMER)(RGK)
2. Median arcuate ligament(MALDA)
3. Cruciate ligaments(BMC)
4. Popliteus(BMC)
5. Spring Ligament(CNMC)
6. Pectineus muscle(CMSDH)
7. Saphenous open(JOKA)
8. Arteria dorsalis pedis(JOKA)

EXPLAIN WHY(3MARKS)

1. Intracapsular fracture of neck of femur may cause avascular necrosis of head of femur (IPGMER)(MCK)
2. Medial meniscus is more susceptible to damage than lateral meniscus of the knee joint (MALDA)
3. Why fracture of neck of femur cause avascular necrosis(BMC)
4. Foot drop is fracture neck of fibula(BANKURA)
5. Anterior Compartment Syndrome(CNMC)
6. Lateral semilunar cartilage is not prone to injury(KPC)
7. Femoral Hernia common in Female(CMSDH)
8. Resiliency of medial longitudinal arch is more than Lateral longitudinal arch(NRS)
9. Bluish pigmented ulcer over the medial malleolus in a bus conductor(RGK)
10. Downhill running ankle injury most common(MMC)
11. Soleus muscle called peripheral heart(MMC)
12. Fracture neck of talus causes avascular necrosis(MMC)
13. Medial meniscus is more susceptible to injury(MSDMCH)
14. Peroneus Longus muscle help in maintaining both longitudinal and transverse arches of the foot(KALYANI)

ABDOMEN

LONG QUESTIONS (12marks)

1. A 65 year old male patient of carcinoma prostate attends surgery OPD with acute onset of low back pain. On lateral view of x-ray of LS Spine, reveals metastatic spread of carcinoma to vertebral column.

i)Justify the proneness of metastatic spread of carcinoma to vertebral column

ii)Enumerate the zones of prostrate

iii)What are the capsules of prostrate and why are they so called such?

iv)Draw a proper labelled diagram of the interior of prostratic urethra 2+2+3+5 (IPGMER)

2.Give an account of anal canal under the following headings:

a.Gross subdivisions.

b.Important structures related to it.

c.Blood supply.

d.Anatomy of haemorrhoids. 2+4+4+2 (MALDA)

3. A person presented with inguino-scrotal swelling. On examination it was found to be inguinal hernia. What is inguinal Hernia ? What are the different types of inguinal hernia ? How do you differentiate between them ? What are the defence mechanisms to prevent inguinal Hernia ? What is hesselbach's Triangle ? (1+1+3+5+2)(BMC)

4.A young Man aged 26 years presented with an inguinal scrotal swelling it was diagnosed inguinal hernia what is the type of hernia in this case. what are the different types ? mention the different boundaries of inguinal canal .what do you understand by the term shutter mechanism ? (1+2+5+4)(BANKURA)

5. a)Write about coverings of Kidney.

b)Draw a diagram of coronal section of Kidney.

C)what are the posterior relations of Kidney.

D)what are the causes of renal agenesis.(3+3+3+3)(CNMC)

6. Name and describe the different peritoneal folds attached to Liver. Describe classical Hepatic lobule. 6+6(KPC)

7. Define the rectus Sheath. Give its formation at different levels. What are the contents of the rectus sheath ? What are tendinous intersections ?(NBMCH)

8.Write down the clinico-anatomical importance of umbilicus. Enumerate the arteries supply the Anterior Abdominal wall. Write the tracing of superficial fascia of Anterior Abdominal wall.Explain the collection of extraverted urine due to rupture of bulbar urethra. 4+2+3+3(NRS)

9.Describe the pancreas under the following heading: i)Presenting parts and relations of head of pancreas ii)Development iii)Histology (MCK)

10.Describe the different parts of nephron. Write the branching of renal artery up to the smallest branch?(RGK)

11.What are the different parts of duodenum? Describe the relations of third part of the duodenum with diagram. How does the common bile duct drain in the duodenum? What are the developmental origins of duodenum?(RGK)

12.A middle aged male patient , with acute pain in epigastric region and vomiting attends medical emergency.On examination and investigation ,he was diagnosed as a case of acute epigastric ulcer.

a)Which region of the stomach is more prone to gastric ulcer.

b)What are the arteries that supply the stomach and their mode of distribution

c)Enumerate the structures of stomach bed.(MSDMCH)

13.Following a motor bike accident,a young man had to undergo splenectomy

a)Is the spleen absolutely essential to life?

b)what is red pulp and white pulp of spleen?

c)illustrate the splenic circulation with a flow chart and diagram.

d)Enumerate the ligaments of spleen.(MSDMCH)

14.Pectinate line is an important landmark of the anal canal. Explain anatomically. Describe the feature of the mucosa and the musculature of the anal canal. Write a note on the. development of anal canal (KALYANI)

SHORT ANSWER TYPE(7MARKS)

1.Write a note on the attachments and contents of the lesser omentum. What are the boundaries of epipolic foramen? 2+2+3 (MALDA)

2.Describe the interior of the second part of duodenum with its blood supply.(4+3)(BMC)

3.Explain the histology of the urinary bladder with diagram. What is Urothelium ? (4+3)(BMC)

4. An elderly lady with the complaint that something coming down to genitalia was diagnosed as case of prolapse of uterus. Give an account of the factors which normally prevent uterine prolapse. 7(BANKURA)

5. a)Draw a labelled diagram of histology of Fallopian tube.

b) what are the different parts of Fallopian tube.

C) Contents of Broad ligament.(3+1+3)(CNMC)

6. Describe the extrahepatic biliary apparatus with a Neat diagram(NBMCH)

7.Name the false ligaments of liver. State within which mesogastrium development of liver takes place and what are the remnants of it ? Write from which part of the Gut liver bud develops ?(NBMCH)

8.What is anteversion and anteflexion of uterus ? Describe the ligaments, muscular and visceral supports of uterus. What is prolapse of uterus ? (2+4+1)(NBMCH)

9.Microcirculation of spleen(MMC) 7

10.Brief description of male urethra(MMC)

11.Vaginal infection more common in infancy and after menopause.(MMC)

12. Enumerate different parts of male urethra. Write down brief about prostatic urethra. Write short note on hypospadias with embryological explanation.1+ 3+3(NRS)

13.Compare the relations of the anterior surface of the kidneys.Give outlines of development of metanephric kidney.(MCK)

14.Describe the microscopical structure of suprarenal gland(MCK)

15.A patient present with obstructive jaundice following cancer of the head of pancreas. Explain anatomically. Describe the structure involved under the following heading-i. Parts with important relation and Development.(KALYANI)

16.Why injury of ilioinguinal nerve above the inguinal canal cause direct inguinal hernia? Describe the defensive mechanism of inguinal canal.2+ 5(KPC)

SHORT NOTES (3MARKS)

1. Meckel's diverticulum(BANKURA)(MCK)
2. Histology of pancreas(CNMC)
3. Pectinate line of anal canal(KPC)
4. Relation of Left kidney(KPC)
5. Lymphatic drainage of stomach(MMC)
6. Blood supply of stomach(NRS)
7. Epiploic foramen(NRS)(MSDMCH)
8. Pubococcygeus(MCK)
9. Imperforate anus(MCK)
10. Lesser sac(RGK)
11. The mesentery(MSDMCH)
12. Transpyloric plane(MSDMCH)
13. Draw a labelled diagram of microstructure of duodenum(MSDMCH)
14. Pectinate line is known as the watershed line of anal canal(MSDMCH)
15. Pancreas-embryology and histology(JOKA)
16. Omental bursa(KALYANI)
17. Superficial perineal pouch(KALYANI)
18. Prostatic urethra(KALYANI)
19. Portocaval anastomosis(JOKA)
20. Renal fascia(JOKA)
21. Hemorrhoids(JOKA)

EXPLAIN WHY(3 MARKS)

1. In case of ruptured membranous urethra extravasations of urine may reach up to axilla but cant extend to the front of the thigh (IPGMER)
2. Lesser curvature of stomach is more prone to ulcerarion (IPGMER)
3. Involuntary passage of urine through the vaginal orifice(MALDA)
4. In upper paramedian incision in abdominal surgery, rectus abdominals muscle is retracted laterally.(MALDA)

5. Why ulceration is more common along listen curvature of stomach(BMC)
6. Physiological umbilical hernia(BANKURA)
7. An old man suffering from carcinoma of prostate develops vertebral metastasis(BANKURA)
8. Explain nerve supply of urinary bladder(CNMC)
9. Portal hypertension may cause blood vomiting(KPC)
10. Varicosity in left testicular vein is common(KPC)
11. Inflammation of appendix causes pain around the umbilicus(KPC)
12. perineal membrane is more tough in male(NRS)
13. Polycystic kidney(NRS)
14. Pudendal nerve block is not sufficient for scrotal surgery.(MCK)
15. Projectile vomiting of a new born after feeding(RGK)
16. Physiological hernia(JOKA)
17. On rate occasion caecum and appendix may not be located in the right iliac fossa(KALYANI)
18. Indirect hernia protrudes lateral to the Hesselbach's triangle. (KALYANI)

NEUROANATOMY

LONG QUESTIONS (12marks)

1.A 50 years old hypertensive patient presented to the emergency with sudden onset of headache and paralysis of right upper and lower limb. CT scan revealed hemorrhage in the left sided internal capsule

a)What type of fibre the internal capsuke is and justify

b)enumerate the parts and fibres passing through it

c)draw a labelled diagram describing blood supply of its different parts

d)Draw a horizontal section of the cerebrum showing its relation with basal ganglion and thalamus (IPGMER) (1+1) +(1+2)+(2+2)+3

2.Describe the cavernous Sinus under the following headings:

a. Formation b. Tributaries c. Relations

3.Infection of upper lip causes cavernous sinus thrombosis.' explain the statement anatomically. (3+3+3+3)(BMC)

4.Write brief note on different walls of third ventricle with labelled diagram. What is blood brain barrier? Give the flowchart of CSF circulation.(BANKURA)7+2+3

5.Discuss about spinal cord under following headings:

i) Length and extent

ii) description

iii) blood supply

iv) Clinical anatomy (3×4)(CNMC)

6.What are the parts of internal capsule ? Give an account of blood supply of different parts of internal capsule with a diagram.Name the nerve fibres passing through it's different parts with a suitable diagram.Why does a patient may develop right sided hemianaesthesia and weakness, when the left sided internal capsule is affected by cerebrovascular accident . (2+4+4+2)(NBMCH)

7.Write short notes on interpeduncular fossa of brain.Describe internal capsule under headings part , relation,fibres, passing passing through it,arterial supply with clinical implication.2+1+4+2+2(NRS)

8.Describe the arterial supply of the superolateral surface of cerebrum. How the collateral circulation is maintained on both sides of the brain.(RGK)

SHORT QUESTION(7MARKS)

1.Draw a neatly labeled diagram of the transverse section of medulla oblongata at the level of sensory decussation. Description is not required. (MALDA) 7

2.Name the different white fibres in brain. Write about corpus callosum and its clinical importance.(2+5)(CNMC)

3. Describe the features of the midbrain at the level of inferior colliculus with a suitable diagram. Which cranial nerve arises at that level ? Mention the names and the nerve supply of the extraocular muscles. (4+1+2)

4.Describe the cranial nerve nuclei present in brain stem with their components(CMSDH)

5.Give the characteristics features seen in transverse section of mid brain at the level of superior colliculus with suitable diagram.What is Weber syndrome?6+1(MCK)

6.Discuss the glossopharyngeal nerve under the following headings ;i)Type of nerve ii)Functional componenets iii)Distribution 1+2+4(MCK)

7. (i) Draw a labelled diagram of the anatomical subdivisions of the cerebellum.

(ii)Enumerate the deep cerebellar nuclei 5+2=7

8.a) Describe the section of midbrain at the level of superior coliculas.

b) Describe the tympanic membrane with clinical importance and development

C) Name the coverings of spinal cord with their termination. Describe the processes of pia mater. (3+2+2)(KPC)

SHORT NOTE(3MARKS)

1. Floor of the fourth ventricle with diagram. (IPGMER)
2. Cross section of midbrain at the level of superior colliculus (IPGMER)
3. Blood supply of spinal cord (IPGMER)
4. Basilar artery (MALDA)
5. . Circle of Willis(BMC)(CNMC)
6. Blood supply of the internal capsule.(BANKURA)
7. Histology of cerebellum(CMSDH)(MMC)
8. Boundaries of 3rd Ventricle(CMSDH)(NRS)
9. Speech centre(MMC)
10. Fornix(MMC)
11. Floor of the 4th ventricle(MMC)
12. Lateral geniculate body(RGK)
13. Corpus callosum(MCK)
14. Lateral sulcus of brain. (MSDMCH)

EXPLAIN WHY(3 MARKS)

1. Macular vision is usually spared in lesion of posterior cerebral artery(IPGMER)
2. Vascular insufficience of upper midbrin causes ipsilateral lateral-squint and contralateral hemiplegia.(MALDA)
3. Macular sparing(BMC)
4. Medial medullary syndrome(KPC)
5. Optic nerve not degenerate after tearing(MMC)
6. Lunate sulcus is axial sulcus(NRS)
7. Argyll-Robertson pupil. (NRS)
8. Prognosis in neurapraxia is better in neurotmesis(MCK)
9. Ischaemic damage to anterior limb of internal capsule may affect recent memory tracing(MCK)
10. Cerebellar lesions may lead to dysdiadochokinesia.(MSDMCH)

HEAD AND NECK

LONG QUESTION(12marks)

1.Following thyroidectomy operation a patient develops hoarseness of voice

a)explain anatomically

b)Enumerate the internal muscles of larynx

c)State the nerve supply of intrinsic muscles of larynx

d)Briefly discuss the action of intrinsic muscles of larynx on rima glottis 2+3+1+6(IPGMER)

2.Discuss the pharynx under the following headings:

a.Gross features (beginning, end, subdivisions and communications).

b.Muscles and nerve supply.

c.Structures passing into the pharynx

d.Killian's dehiscence(MALDA) 4+4+3+1

3. Describe the temporo-mandibular joint under the following headings:

a. Type of joint, b. Ligaments, c. Movements possible, d. Muscles

responsible for the respective movements. (1+2+3+3+3)(BMC)

4.15 year old boy was found to present discharge of passthrough is right ear due to infection of Middle ear cavity of the same side following recurrent throat infection. From your knowledge of anatomy state the reason. Briefly the boundaries and contents in clinical anatomy of the middle ear.(BANKURA) 2+10

5. Write about the tongue under following headings:

i) muscles of tongue

ii) Nerve supply

iii)the papillae of tongue (5+5+2)(CNMC)

6.Describe the parotid gland on following heading: a)Covering /b) relation/ C) nerve supply/ D) Arrangement of different structure passes through it / e) Frey's syndrome(2+3+2+3+3+2)(KPC)

7.What are the muscles of soft palate ? Mention their origin , insertion and nerve supply. What is the secretomotor supply to the Palatine glands ? What is a passavant's ridge ? (2+6+2)(NBMCH)

8.Describe the T.M. joint under the following heading

a)Formation of the joint

b)Movements of the joint with axis and muscles responsible for the movements

c)Clinical aspects of the joint. (3+6+3)(CMSDH)

9.Describe the occulomotor nerve under following headings

a.Origin b.Course c.Applied importance 3+5+4(MMC)

10. Enumerate the features of posterior wall of middle ear cavity. Enumerate nerve nuclei and functional component of facial nerve.Write notes on pterygopalatine ganglion on headings of situations branches and connections.2+2+2+1+3+2(NRS)

11.Describe the palatine tonsils under the following headings :i)location ii)Relations iii)Histology iv)Blood supply v)Development1+3+3+3+2(MCK)

12.A Patient came to the OPD with complaints of difficulty in speech. On examination, he was found he have tongue-tie.

(a) What is the possible explanation?

(b) Enumerate the muscles of the tongue?

(c) Give a brief account of the sensory innervations of the tongue.

(d) Name the different types of papillae found in the tongue. 1+6+3+2=22(MSDMCH)

SHORT ANSWER (7MARKS)

1.Answer the following about tympanic cavity-

i) Features on medial wall

ii) Nerve supply of tympanic membrane

iii)Development .

iv) in which part of tympanic membrane myringotomy is done and why? 2+1+2+2 (IPGMER)

2.Describe briefly the structures related to the parotid gland. Trace its secretomotor nerve supply. (MALDA)5+2

3.Write a brief note on the development of tongue with embryological explanation of its nerve supply. (4+3)(BMC)

4.What are the manifestations of oculomotor nerve lesion? Describe the course of the nerve in the middle cranial fossa and Orbit. Explain the cause of lateral squint and dilated Pupil in oculomotor nerve palsy.

(BANKURA)2+3+2

5.Write about cavernous sinus under following heading:

I) position and structure passing through

ii) clinical anatomy (4+3)(CNMC)

6.Middle ear cavity applied(MMC)

7.Phonation 7 (MMC)

8.Soft palate(MMC)

9.Name the muscle of pharynx. Give the their nerve supply.what is killian's dehiscence?(RGK)

10.Describe the arterial supply of thyroid gland.What is its applied importance?(RGK)

11. (I) Enumerate the muscles of the larynx with their nerve supply.

(ii) Which muscle is known as the safety muscle of the larynx and why? 5+2=7 (MSDMCH)

SHORT NOTE(3MARKS)

1. Structure of cornea with diagram (IPGMER)
2. Petrotympanic fissure(MALDA)
3. Ansa cervicalis(BMC)(NRS)
4. Platysma(BMC)
5. Cauda tympani nerve(BANKURA)
6. Rima glottidis(BANKURA)
7. Nasal Septum(CNMC)
8. Waldeyers ring(CNMC)
9. structure of cornea(KPC)
10. Lymphatic drainage of tongue(CMSDH)
11. Freys Syndrome(CMSDH)
12. Middle meatus of nose(NRS)
13. Danger layer of scalp(RGK)
14. Tympanic membrane(RGK)
15. Ciliary body(RGK)
16. Crocodile tear(RGK)
17. Sensory innervations of face(MCK)
18. Vocal cord(MCK)
19. Pyriform fossa.(MSDMCH)
20. Sternocleidomastoid musele(MSDMCH)

EXPLAIN WHY(3 MARKS)

1. Left recurrent laryngeal nrve hooks around the ligamentum arteriosum while right recurrent laryngeal nerve hooks around the right subclavian artery(IPGMER)
2. Parotitis is extremely painfull(IPGMER)
3. Bell's palsy(BMC)
4. Syringing of external ear leads to coughing(BMC)

5. Following operation of thyroid gland patient develops hoarseness of voice(BANKURA)
6. Syringing of external ear lead to cardiac arrest(BANKURA)
7. A man develops hyperacusus due to lesion of intrapetrous part of facial nerve(BANKURA)
8. Abducent Nerve Palsy is common manifestation of increased intracranial pressure.(BANKURA)
9. In tonsillitis,pain is referred to mid ear(CNMC)
10. Inflammation of the parotid gland is very painful(CNMC)
11. Injury of sphenoidal spine causes loss of secretomotor action of all salivary gland(KPC)
12. Thyroglossal Cyst moves with deglutition(CMSDH)
13. Facial Artery is Tortuous in its course.(CMSDH)
14. Bells Palsy(CMSDH)
15. Killian's dehiscence causes dysphagia(MMC)
16. Rapid descending of airplane causes severe ear pain and impaired hearing.(MMC)
17. Patients sometimes complain of loss of taste sensation after tonsillectomy(NRS)
18. Cause of protrusion of mandible(RGK)
19. New born baby with lateral swelling of the neck(RGK)
20. Submandibular salivary calculus is commoner than parotid calculus
21. Horner's syndrome(MCK)
22. Lock jaw(MCK)
23. A patient complains of hoarseness of voice following thyroidectomy operation(MSDMCH)
24. Tonsillitis may lead to pain in the ear(MSDMCH)

EMBRYOLOGY

LONG QUESTION (12MARKS)

1.Describe the right atrium under the following headings

a)Development

b)Interior of right atrium

c)Clinical importance with blood supply.3+6+3(CMSDH)

2.Development of kidney.What is polycystic kidney disease?10+2(MMC)

3.Give the presenting parts and relations of the ovary.Give a brief account of the development ovary.Draw a labelled diagram of Graffian follicle

4.Describe the different parts of nephron. Write the branching of renal artery up to the smallest branch(RGK)

5.Horse shoe kidney occupies a lower position a normal kidney. Explain anatomically. Describe the development of the kidney in brief with a note on the development anomalies. What is renal angle with its applied importance(KALYANI)

SHORT ANSWER (7 MARKS)

1.Discuss the embyological basis of sensory innervations of face . Discus the various embryological basis of cleft lip (IPGMER) 4+3

2.A child suffers from fallot tetralogy. Mention the anatomical features of this congenital anomaly. Write a brief note on development of ventricular septum. 2+5(Bankura)

3.Brief account of development of kidney. What is horseshoe kidney ? (6+1)(BANKURA)

4.What is implantation? What are the usual and unusual sites of implantation?Draw a labeled diagram of blastocyst? 2+(1+2)+2 (IPGMER)

5.What is fertilization? Describe the effects of fertilization. 1+6(KPC)

6.Describe the derivatives of 2nd Pharyngeal arches(CMSDH)

7.Describe the development of Interventricular septum(CMSDH)

8.Describe the development of kidney with congenital anomalies.(CMSDH)

9.Describe the development of testis with a note on its descent.(CMSDH)

10.Describe the rotation of gut with anomalies.(CMSDH)

11.Rotation(MMC)

12.Folding of the embryo with diagram(MMC)

13.Describe the derivatives of endodermal pouches. What is branchial cyst?(RGK)

14.The second week of development is called the week of two. Justify the statement with example.(MSDMCH)

SHORT NOTE(3MARKS)

1. Foramen ovale(IPGMER)
2. Intermediate mesoderm(IPGMER)
3. Fate of gubernaculum in females(MALDA)
4. Morula(BMC)
5. Meckel's cartilage(BMC)(KPC)
6. Polycystic kidney(BMC)
7. Derivative of second branchial arch.(BANKURA)
8. Annular Pancreas (IPGMER)
9. Acrosomal reaction (IPGMER)
10. Fates of vitello intestinal duct(KPC)

11. inner atrial septum(KPC)
12. Derivatives of mesonephric and para mesonephric ducts(KPC)
13. Annular Pancreas(CMSDH)
14. Corpus leuteum(MMC)
15. Development of superiror vena cava(NRS)
16. Effects of fertilization(NRS)
17. Chorionic vilii(MCK)
18. Development of thyroid gland(MCK)
19. Notochord(MSDMCH)
20. Placenta(JOKA)
21. Paraxial mesoderm(KALYANI)

EXPLAIN WHY (3MARKS)

1. Inferior parathyroid gland is developmentally superior (IPGMER)
2. Ureter without kidney is possible but kidney without ureter is not possible (IPGMER)
3. Monozygotic twins are identical, whereas dizygotic twins are not(MALDA)
4. Lingual thyroid(KPC)
5. Imperforate anus(NRS)
6. Microstomata(MCK)
7. Raspberry tumour at the umbilicus in a new born baby. (RGK)
8. Branchial cyst(MCK)
9. First Branchial Arch(MSDMCH)
10. Embryological basis of ectopic pregnancy(MSDMCH)

GENERAL ANATOMY

SHORT ANSWER(7 MARKS)

1.a) Define joints.

b) Classify synovial joints with examples.

C) What are the characteristics of synovial Joint.(1+4+2)(CNMC)

2.Write the histology of spleen with labelled diagram.Write histologically difference between spleen and lymph nodes.5+ 2(NRS)

3.What are the different types of muscle tissue.?Describe a stripped muscle fibre with its ultrastructure.?((RGK)

SHORT NOTE(3 MARKS)

1. Transitional epithelium (IPGMER)(NRS)
2. Sarcomere(MALDA)
3. Endometrium in secretory phase.(MALDA)
4. Pivot joint(BMC)
5. Turner's syndrome(BMC)(BANKURA)(IPGMER)(NRS)(RGK)
6. Goblet cell(BMC)
7. Mic roscopic structure of lymph node(BANKURA)
8. Sesamoid bone(BANKURA)(JOKA)
9. Down syndrome(KPC)(CMSDH)(MMC)
10. Histology of duodenum(CMSDH)
11. Fibrous joint(MMC)
12. Placental membrane.(MMC)
13. Cardiac muscle(MCK)
14. SRY gene(MCK)
15. Spurt and shunt muscles(KALYANI)

EXPLAIN WHY

1. Metaphysis is common site of infection in a young long bone(IPGMER)
2. Presence of barr-body in the buccal smear of a male patient(MALDA)
3. Superficial burns injury is painful and less harmful than deep burns which is painless.(MALDA)
4. Epiphysis around the money is important media legally.(BANKURA)
5. Pimples or Acne is common in puberty.(CNMC)
6. Osteomyelitis common in end of long bone.(CMSDH)

THORAX

LONG QUESTIONS(12 MARKS)

1.Give a brief account of the development and nerve supply of the diaphragm. What are the openings and what are the structures passing through it. What is Bochdalek's Hernia? 6+4+2(MALDA)

2.Define pleura .Enumerate its nerve supply and its parts.Describe the costomediastinal reflection of pleura. What is pleural effusion?(RGK)

3.Discuss the development of interatrial septum with suitable diagram .Give the congenital anomalies of the septum.8+4(MCK) .

4.(a) Enumerate the major openings of the diaphragm.

(b) Write the structures passing through them.

(c) What is the effect of respiration on these openings? 3+6+3=12 (MSDMCH)

5.Describe the diaphragm under following headings

a.Origin b.Major openings. c.Nerve supply d.Its action is increasing all the diameter of thoracic cage. 3+3+2+4(KPC)

SHORT ANSWER(7MARKS)

1.Write down the commencement course and distribution of LCA . What is angina pectoris? Enumerate the sources of development of inter atrial septum. 1+2+2+1+1 (IPGMER)

2.What is mediastinum? How can you sub divide the mediastinum? Enumerate the structures present in the posterior mediastinum?1+2+4(MALDA)

3. Enumerate the bronchopulmonary segments of both lungs. Aspiration pneumonitis is common in which segments ? (5+2)(BMC)

4.Fluid generally collects into costodiaphragmatic recess. Justify the statement. Prove the costodiaphragmatic and costomediastinal reflection of pleura2+2+3(BANKURA)

5.Define Bronchopulmonary segment. Name the different Bronchopulmonary segments. Define bronchoscopy. (2+4+1)(CNMC)

6.Describe the features of right atrium.7 (NRS)

7.Name the different parts of pleura.Give the nerve supply and development of pleura.What is the clinical significance of the costo-diaphragmatic recess of pleura?2+3+2(MCK)

8. (i) People with left coronary predominance are more likely to suffer from coronary diseases--Why?

(ii) Enumerate the branches of the Left Coronary Artery. 2+5=7 (MSDMCH)

Short note(3 MARKS)

1. Typical intercostals nerve(MALDA)
2. Bronchopulmonary segments.(MALDA)(MCK)
3. Hilum of lung(BMC)
4. Constrictions of eshophaus(CNMC)
5. Blood supply of the interventricular septum(CNMC)
6. Coronary Sinus(CMSDH)
7. Middle Lobe syndrome(CMSDH)
8. Parietal pleura(MMC)
9. Pulmonary ligament(NRS)
10. Typical intercostal space (RGK)
11. Posterior intercostals veins(MCK)

12. Notching in the ribs found in the chest x ray of the patients with coarctation of the aorta(MCK)
13. Superior Vena Cava(MSDMCH)
14. Foreign body aspiration is more common in right lung(MSDMCH)

EXPLAIN WHY(3 MARKS)

1. In disease condition a single bronchopulmonary segment can be excised(BANKURA)
2. Entry of foreign body into right bronchus is common(CNMC)
3. Respiration in first 2 years of life, almost abdominal.(MMC)
4. Pain may be felt at neck during Myocardial infarction.(MMC)
5. Fibers of right crus of the diaphragm are supplied by both phrenic nerve. (NRS)

"Unite,Raise your Voice and Stop Ragging"

"Doctors! Go to the wounded! Do not wait for them to come to you."

–Dr. Norman Bethune

PHYSIOLOGY Chapterwise questions of 1st and 2nd semester (Brought to you by ALL INDIA DSO)

GENERAL PHYSIOLOGY

SHORT ANSWER TYPE (7 MARKS)

1)Plasma concentration is strictly maintained.(RGK)

2)What is Gibbs-Donnan equilibrium? Discuss its importance in physiology. Why glucose is add to salt solution while treating diarrhoea? 2+3+2(IPGMER)

SHORT NOTES (3 marks)

1. Secondary active transport(BSMC)(MSD)
2. Role of Gibbs-Donan effect in regulation of RMP(NRS)
3. Secondary active transport(RGK)
4. Gap junction(RGK)(IPGMER)
5. Primary active transport(MALDA)
6. Transport mechanism across the cell membrane.(NBMC)
7. Primary active transport and secondary active transport.(JGMC)
8. Exocytosis and endocytosis.(JGMC)

EXPLAIN WHY (3 MARKS)

1. Glucose is an important component of ORS.(NRS)
2. Sugar is added in ORS.(MMC)
3. RMP of an excitable cell is negative.(JGMC)

NEUROMUSCULAR PHYSIOLOGY

LONG QUESTIONS (12 marks)

1. Describe an action potential with diagram discuss its ionic basis. (4+2+6)(BSMC)
2. Describe the excitation-contraction coupling. Differentiate between Myasthenia gravis and Lambert Eaton syndrome. (NBMC)
3. What is excitation contraction coupling? Briefly describe the molecular basis of contractions and relaxation of skeletal muscle? what is rigor mortis? 2+6+2(kalyani)
4. Define Pallisade.Discuss the steps of skeletal muscle contraction? What is Myasthenia gravis.(JGMC)

5. Describe the structure of neuromuscular junction with the help of a diagram and explain the mechanism of transmission of nerve impulse.(JGMC)

SHORT ANSWER TYPE (7 MARKS)

1. Discuss about Neuromuscular Transmission and actions of different neuromuscular blockers. 7 (KPC)
2. Describe the molecular basis of skeletal muscle contraction. Write a note on "Oxygen Debt". (4+3)(KPC)(MSD)
3. Describe the mode of action of drugs affecting neuromuscular transmission. (7)(BSMC)
4. Discuss the molecular basis of skeletal muscle contraction. What is Rigor mortis? (5+2)(CNMC)
5. Briefly describe the molecular basis of excitation-contraction coupling in skeletal muscles with suitable diagram. What is Latch Phenomenon? 5+2(NRS)
6. Draw a diagram of action potential of a Motor nerve. Write the ionic basis of it.3+4(MMC)
7. Define action potential .With the help of a well labeled diagram state the different phases of it and their ionic basis in a nerve. What's injury potential?1+5+1(CMSDH)
8. What do you mean by excitation contraction coupling? Describe sequence of events occurring during the process.2+5 (CMSDH)

SHORT NOTES (3 marks)

1. Myasthenia gravis(BMC)(MALDA)(MMC)
2. Tetany (BMC)(IPGMER)(NRS)
3. Rigor mortis(BSMC)
4. Resting membrane potential.(NBMC)
5. Neuromuscular transmission(MCK)

EXPLAIN WHY (3 MARKS)

1. Digitalis increases the force of contraction of cardiac muscle(KPC)
2. Isometric exercise are not advisable in elderly subjects.(BMC)
3. Succinylcholine is used as muscle relaxant before endotracheal intubation.(MALDA)
4. Neostigmine is used in the treatment of myasthenia gravis.(IPGMER)
5. Relaxation of muscle is an active process(MMC)
6. Rigor mortis is seen after death. (NBMC)
7. Rigor Mortis sets earlier in soldiers who die in battle field.(JGMC)

"Hold high the noble banner of medical ethics"

HAEMATOLOGY

LONG QUESTIONS (12 MARKS)

1. Enumerate the different plasma proteins.Describe the properties and functions of plasma proteins.What is plasmapheresis? 2+8+2(KPC)
2. What is haemophilia ? Enumerate the steps of hemostasis. Describe the intrinsic pathway of coagulation. (2+3+7)(BMC)
3. Describe the steps of erythropoiesis with diagram. Discuss the factors regulating erythropoiesis. What is reticulocyte crisis and when does it occur? (6+4+2)(CNMC)
4. Describe the role of lymphocytes in immunity. What is Acquired immune deficiency syndrome?9+3(RGK)
5. Define immunity. Discuss briefly the different types of immunity. Why AIDS is associated with compromised immunity. 2+7+3(MSD)

SHORT ANSWER TYPE (7 MARKS)

1. Classify immunity with appropriate example in each category. What is 'immunological Synapse'?5+2(NRS)
2. Classify granulocytes on the basis of characteristics of granules. Describe the bactericidal role of neutrophills in acute infections 2+5(IPGMER)
3. What are the different types of immunity? Discuss the role of neutrophil in immune defense.(MALDA)
4. Enumerate the functions of platelets. Describe the extrinsic pathway of coagulation.2+5(MMC)
5. What are the functions of platelets ? What is Von-willebrand disease ? (4+1)(NBMC)
6. Define hemostasis.Enumerate the role of platelet in primary hemostasis.How aspirin modulates platelet function?2+3+2(MCK)

SHORT NOTES (3 marks)

1. Rh incompatibility(KPC) .
2. Immunity(BMC)
3. Immunoglobulins(BSMC)
4. Innate immunity(cnmc)
5. Fibrinolytic system(CNMC)
6. Monocyte-Macrophage system(NRS)
7. Anticlotting mechanism(IPGMER)
8. Hemoglobinopathies(MMC)
9. Triple response of lewis(CMSDH)
10. ESR(CMSDH)
11. RBC membrane(JGMC)

"SCRAP NMC BILL"

EXPLAIN WHY (3 Marks)

1. Regular low dose of aspirin prevents thrombosis.(KPC)

2. Aspirin in low doses prevents intravascular coagulation(BMC)
3. Iron deficiency causes microcytic anemia(CNMC)
4. Eosinophils are important effector cells in parasitic infection.(NRS)
5. Aspirin in low doses prevents intravascular clotting.(RGK)
6. Dicumarol and warfarin are effective anticoagulants(MALDA)
7. Hematocrit value in venous blood is higher than the arterial blood.(MSD)
8. RBC in venous blood is slightly larger than its arterial component. (NBMC)
9. Severe bleeding occurs in disseminated intravascular coagulation.(MCK)

RESPIRATORY SYSTEM

LONG QUESTIONS (12 MARKS)

1. What are chemoreceptors ?How do they play their role in regulation of respiration? What is CO2 Narcosis? Explain why administration of oxygen in some patients can be dangerous?2+6+2+2(NRS)
2. Describe oxygen transport mechanism in blood. Discuss the cause & importance of the sigmoid shape of oxygen-haemoglobin dissociation curve. Mention the factors which shift this curve. (4+4+2)(NBMC)
3. Describe the modern concept of neural regulation of respiration. What is Cheyne Stokes breathing? Wright the physiological basis of Cheyne Stokes breathing with suitable example?6+1+3 (kalyani)
4. Write the role of central and peripheral chemoreceptors in regulation of ventilation. Explain the adjustment of central chemoreceptors in high altitude aclimatisation. 8+4(IPGMER
5. What are Chemoreceptors? Describe their roles in the regulation of respiration and in maintaining blood pressure. What is oxygen Debt?2+8+2(CMSDH)

SHORT ANSWER TYPE (7 MARKS)

1.Define compliance. Enumerate different types of lung compliance and explain each type. What is the role of surfactant in lung compliance? 1+4+2(NRS)

6. What is Bohr effect? Describe how carbon dioxide is transported to lungs .3+4 (RGK)
7. Describe the oxygen dissociation curve and the factors influencing it. (3+4)(BMC)(MSD)
8. Describe O2-Hb dissociation curve with its regulation.What is Haldane Effect? 5+2(KPC)
9. Write down the structure of respiratory membrane. Describe the different factors influencing the exchange of gases through it.(CMSDH)
10. What is pulmonary surfactant ? Explain the role of Pulmonary surfactant in maintenance of the stability of alveoli. (2+3)(NBMC)
11. What is hypoxia and the types of hypoxia. What are the causes of hypoxic hypoxia? What are the symptoms and signs of long standing hypoxia(JGMC)

12. Describe the physiological changes occurring during acclimatization in high altitude. What are HAPE and HACE? (5+2)(CNMC)
13. Describe the acclimatization to high altitude. (7)(BSMC)
14. What is acclimatization at high altitude? Describe the process and changes which occur during acclimatization.2+5(RGK)
15. What are the major stimuli for peripheral and central chemoreceptor? Explain their role in regulation of ventilation. 3+4(MALDA)
16. What are the causes of stagnant hypoxia? Write the summary of types of hypoxia with special reference to arterial pO_2 and arterial O_2?
17. Enumerate and describe then central and peripheral chemical control of respiration.What isocapnic buffering?5+2(MCK)

SHORT NOTES(3 MARKS)

1. Timed Vital Capacity (KPC)
2. Alveolocapillary membrane(BMC)
3. Surfactant (cnmc)
4. O2-Hb dissociation curve(CNMC)
5. Surfactant(RGK)
6. Sleep Apnoea(MALDA)
7. vital capacity(MSD)
8. Lung compliance(MMC)
9. Bohr effect.(JGMC)
10. Chloride shift.(JGMC)
11. Respiratory burst(MCK)

EXPLAIN WHY (3 MARKS)

1. Respiration becomes slow and deep after vagi are cut. .(CMSDH)
2. Cyanosis does not occurs in severe anemia.(KPC)(nbmc)
3. RBC in venous blood are slightly larger than in arterial blood.(BMC)
4. Oxygen should be administered cautiously in patient suffering from hypoxia with hypercapnia.(BSMC)
5. Treatment of decompression sickness(IPGMER)
6. Carbon-monoxide poisoning is often listed as a form of anemic hypoxia.(malda)
7. Polycythemia is present in habitant of high altitude.(MSD)
8. Oxygen therapy for chronic hypoxia should not be corrected rapidly.(MMC)
9. Compliance curve shows hysteresis loop.(JGMC)
10. FEV_1 decrease in obstructive lung disease whereas VC remains same.(JGMC)
11. Anemia does not stimulates respiration (MCK)
12. Venous blood hematocrit is greater than that of arterial blood.(MCK)

CARDIOVASCULAR SYSTEM

LONG QUESTIONS [12 MARKS]

1. Describe in brief the regulation of blood pressure. What is "malignant hypertension". What is "vasomotor reversal of Dale". (8+2+2)(BMC)
2. Define blood pressure and mean BP. Discuss long term regulation of BP. (2+2+8)(BSMC)
3. Describe briefly the different methods of regulation of BP. Discuss the types of heart failure in short.(8+4)(CNMC)
4. Enumerate the mechanical properties of cardiac muscles. Outline the spread of cardiac impulse after originates from SA node. What is 'complete Heart Block'? Give a schematic representation of factors regulating cardiac output. 2+4+2+4(NRS)
5. Define cardiac cycle. Describe the mechanical events occurring in the heart during the cycle. Explain why the splitting of the second heart sound is well heard during the deep inspiration.2+8+2(RGK)
6. What are the junctional tissues of heart? Which is the natural pacemaker and why? Give the ionic basis of AP seen in such tissues. How sympathetic and vagal stimulation affects the pacemaker potential? 2+2+4+4(IPGMER)
7. Draw and lable the various phases of typical myocardial cell action potential. Explain the ionic basis of each phase. Write a note on pacemaker potential.4+4+4(MALDA)
8. What are the difference mechanisms for regulation of arterial pressure? Write a note on Hypertension.8+4(MALDA))
9. Define cardiac output. Mention different factor controlling cardiac output. What is the speciality of cardiac muscle refractory period?2+7+3(MALDA)
10. What is ECG?High augmentation occurs in augmented leads. Describe different types of A-V blocks.2+4+6(MMC)
11. Define cardiac output. Describe the factors affecting cardiac output. Mention different methods for determining cardiac output. How does fick's principle help to determine cardiac output. (1+4+2+3)(NBMC)
12. Describe the mechanical events that occur in atria and ventricle of the heart during a cardiac cycle. What are causes of four heart sounds? 8+2 (kalyani)
13. Describe the systemic arterial mechanoreceptor.State their role in regulation of blood pressure.Describe the effects of bilateral occlusion of common carotid arteries with or without carotid sinus deaffarentiation.3+6+3(MCK)
14. Define ejection fraction and state its applied implication.Exaplain the factors that regulate end systolic ventricular volume.Draw the left ventricular pressure –volume loop and its modulation by the above factors.3+5+4(MCK)

SHORT ANSWER TYPE (7 Marks)

1. Describe briefly the difference between cardiac muscles action potential and skeletal muscles action potential. What is Idioventricular Rhythm? 4+3(KPC)

SHORT NOTES (3 MARKS)

1. Pacemaker Potential(kpc)(MSD)
2. 2nd degree heart block(bmc) .
3. Funny current(BSMC)
4. Heart block(CNMC)
5. Baro-receptor reflex(NRS)(MSD)
6. Autoregulation of coronary blood flow(NRS)
7. P-R interval(RGK)
8. Heterometric regulation of cardiac output(IPGMER)
9. Leads in ECG(MALDA)
10. Sino aortic reflex(MMC)
11. Peripheral resistance.(CMSDH)
12. Venous Return(CMSDH)
13. Ejection fraction.(NBMC)
14. Pacemaker potential(JGMC)
15. Herring breuier's reflex(MCK)

EXPLAIN WHY (3 MARKS)

1. Bradycardia occurs in increased intracranial tension.(bsmc)(MSD)
2. All the types of hypoxia cannot be treated with 100% oxygen.(CNMC)
3. Hyperventilation continues even after stoppage of exercise.(CNMC)(NRS)
4. Dural sinuses are prone to air embolism.(NRS)
5. Pulse rate increases with respiration.(IPGMER)
6. During deep inspiration, physiological splitting of second heart sound may occur.(MALDA)
7. Cardiac muscle cannot be tetanised.(MMC)
8. Myocardial contractile cells never get fatigued. (NBMC)
9. Right ventricular hypertrophy is seen in high altitude dwellers. . (NBMC)
10. Patients of Aortic stenosis are prone to suffer Myocardial ischaemia. .(CMSDH)

11. Cardiac muscle cannot be tetanised (JGMC)
12. SA node is a natural pacemaker.(JGMC)
13. Subendocardium region of the left ventricle is especially vulnerable to ischemia(MCK)

DIGESTIVE SYSTEM

LONG QUESTIONS[12 Marks]

1. Describe in details about the GI hormones with their source of secretion and function.What is Z-E syndrome? 10+2(KPC)
2. Enumerate functions of Liver. Describe metabolic functions of the organ. Enumerate the parameters of LFT.3+6+3 (CMSDH)
3. What are the functions of colon? Expand your idea about types of motility patterns observed in small intestine and Collon? Give an account of paralytic ileus?2+5+3 (kalyani)
4. What is the type of smooth muscle present in the wall of GI tract? What are different types of cells in stomach? What are agents that stimulate parietal cells. Name their blockers.(JGMC)

SHORT ANSWER TYPE (7MARKS)

1. Describe jaundice. Compare obstructive and hemolytic jaundice. (2+5)(BMC)
2. Describe the mechanism of HCL secretion. What is post prandial alkaline tide? (5+2)(BSMC)
3. What is Gastric Emptying? Discuss the factors influencing it.(2+5)(CNMC)
4. What is gastric mucosal barrier? Describe the physiological basis of management of peptic ulcer.3+4(RGK)
5. HOW glucose is absorbed from intestine. Why newborn children defecate routinely after intake of food? What is hirschprungs disease? 3+2+2(IPGMER)
6. Rebound hypoglycemia occurs in patients with total gastrectomy.(IPGMER)
7. What are the bile salt? State their functions. What are the consequences of complete biliary obstruction?(MALDA)
8. Mention the mechanism of HCL secretion in stomach. Discuss the factors regulating acid secration.3+4(MSD)
9. What is peptic ulcer ? Write down the mechanism of occurrence of peptic ulcer. How can you treat from point of physiological basis?1+3+3(MMC)
10. Mention the functions of bile. What are the consequences of complete biliary obstruction ? (3+2)(NBMC)
11. Describe the gastric mucosal barrier and its implication .What is peptic ulcer.5+2(MCK)

SHORT NOTE (3 marks)

1. Coeliac disease (kpc)
2. Bile salts(kpc)
3. Mucosal barrier of stomach(BMC)(NBMC)
4. Peristalsis(BSMC)

5. Post prandial alkaline tide & its physiological significance(NRS)
6. Enterohepatic circulation(NRS)(MCK)(JGMC)
7. Segmentation movements(RGK)
8. Gastrin(MALDA)
9. Movements of small intestine(MSD)
10. Dumping syndromes.(MMC)
11. Migrating motor complex. (NBMC)
12. ZE syndrome(JGMC)
13. Minor gastrointestinal hormone(jgmc)

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EXPLAIN WHY (3 MARKS)

1. Thought of delicious food can induce salivary secretion.(KPC)
2. Patient with Xerostomia have higher incidence of dental caries.(BMC)
3. Stomach is not auto digested.(BSMC)
4. Coagulation defect may be seen in obstructive jaundice.(BSMC)
5. Pancreas is not autodigested.(CNMC)
6. Steatorrhea occurs in pancreatitis.(NRS)(MSD)
7. Anemia occurs after total or partial gastrectomy(RGK)
8. Urine becomes alkaline after taking a meal.(RGK)
9. Appriciable amount of stool continues to be passed even during prolonged starvation.(RGK)
10. Omeprazole is used in treatment of acid peptic disorder.(CMSDH)
11. During vomiting salivation occurs(JGMC)

EXCRETORY SYSTEM

SHORT ANSWER TYPE (7 MARKS)

1. Write briefly about the types of water absorption in various parts of nephron. What is water intoxication? (5+2)(KPC)
2. Where is the site of production of renin ? Name the stimulants for renin secretion. What are the sequence of events in the renin- angiotensin system ? (1+2+4)(BMC)
3. What is renal threshold ? Explain the splay phenomenon.7(BSMC)
4. Explain the role of urea in the establishment of medullary hyperosmotic gradient of kidney with proper diagram.(CNMC)
5. Urinary buffers are essential to maintain body fluid pH constant.(RGK)
6. Describe the renal handling of Na+.(MCK)

7. Explain the counter-current Exchanger and multiplier mechanism in details.3+4 (JOKA)
8. How urea is transported through renal tubules?What is the importance of renal recycling of urea? 5+2(IPGMER)
9. State how water is reabsorbed by renal tubules. Name two diuretics with their mechanism of action.5+2(MALDA)
10. Mention different types of diuretics along with their sites of action.4+3(MMC)
11. What is diuretic ?Explain how frusemide acts as diuretic.Describe how water is reabsorbed in different parts of renal tubule.1+2+4(CMSDH)
12. Write briefly about the factors controlling GFR with examples.What is the role of " Counter current exchanger" in concentration of Urine?(4+3) (NRS)
13. What is GFR? What is the important factors that affects GFR? what is filtration fraction?(JGMC)

14.Difference between cortical & juxta-medullary nephrons. Briefly describe the counter-current mechanism in kidney. (2+5) (NBMC)

SHORT NOTES (3 MARKS)

1. Micturation reflex(BMC)(IPGMER)
2. Tubuloglomerular feedback(BSMC))(NBMC)
3. J-G Apparatus(MSD)(JOKA)
4. Neurogenic bladder(MCK)
5. Creatinin clearance test(MALDA)(MMC)
6. Acidification of urine(JGMC)

EXPLAIN WHY (3 MARKS)

1. Actual renal threshold value for glucose is less than the predicted value(BMC)
2. Albuminuria occurs in glomerular disease(BSMC)
3. In the renal tubule, lowest attainable ph is 4.4(MSD)
4. Acidosis may lead to hyperkalemia by renal compensation.(IPGMER)
5. Decreased renal blood flow increases blood pressure.(MMC)
6. Actual Renal threshold value for glucose is less than predicted value.(CMSDH)
7. In mismatched transfusion there may be acute renal shutdown. (CMSDH)
8. Urinary bicarbonate buffer is the most important buffer in combating metabolic acid load.(NRS)
9. Chronic renal failure in children may lead to rickets. (NRS)

ENDOCRINE PHYSIOLOGY

LONG QUESTION (12Marks)

1. Enumerate the functions of calcium in our body. Write briefly about the role of different hormones in maintaining calcium hemostasis. Mention the differences between rickets and osteomalacia. (2+6+4)(KPC)
2. Write about the synthesis of thyroid hormones and their release into circulation. What are the functions of thyroid hormones ? What is "myxedema" ? Write a note on thyrotoxicosis. (4+4+2+2)(BMC)
3. Describe the proper flowchart the steps of thyroid hormone biosynthesis. What are the effects of thyroid hormones on cardiovascular system? What are the differences between cretinism and adult hypothyroidism? (6+3+3)(CNMC)
4. Enumerate the hormones of Islets of Langerhans. State the actions of insulin. Why Polyphagia occurs in Diabetes Mellitus? [3+7+2] (MSD)
5. What are the components of Hypothalamo-pituitary-adrenal hormonal axis?Enumerate the functions of glucocorticoids.What are the features of hyperaldosteronism?(RGK)
6. Name the various layers Adrenal Gland and Hormones secreted by them .Describe the actions of glucocorticoids .And a note on "Cushing Syndrome".(JOKA)
7. Write about mechanism of action of hormones acting through G-protein. What do you mean by downregulation of receptors.10+2(MMC)
8. Write the actions of thyroid hormones on CVS and CNS.Write the permissive action of thyroid hormones.(MMC)
9. Enumerate the hormones secreted by follicular cells of thyroid gland. Outline the steps of biosynthesis of these hormones. Write about the effects of these hormones in nervous system.List the features found clinically in hypofunction of thyroid.1+4+3+4(CMSDH)
10. What are the hormones secreted by the thyroid gland ? Describe the functions of thyroid hormones. Write the features of hyper secretion of thyroid hormones. (3+4+5) (NBMC)

SHORT ANSWER TYPE (7 MARKS)

1. Discuss the clinical features of Cushing's syndrome.7 (BSMC)
2. Enumerate the calcitrophic hormones? What are their physiological action? what is tetany?(JGMC)
3. What is Diabetes mellitus? Describe the mechanism of action of insulin. How exercise improves hyperglycaemic state ?2+3+2(MCK)
4. Enumerate the ovarian hormones with their cellular sources. Describe functions of oestrogen.2+5(MCK)
5. Explain the role of various hormones that maintain plasma glucose level.What is renal threshold of glucose?Explain the pathophysiology of Diabetic ketoacidosis. 4+1+2(IPGMER)
6. Describe the functions of glucocorticoids. What is permissive action of glucocorticoids?5+2(MALDA)
7. Explain the mechanism of action of growth hormone?What are the functions of somatostatin? What are the different types of dwarfism?(3+2+2) (NRS)

SHORT NOTES (3 MARKS)

1. Cretinism (KPC)
2. **G** protein (BSMC)
3. Addison's disease(CNMC)
4. permissive action of glucocorticoid (MSD)
5. Myxedema(MSD)
6. Melatonine(RGK)
7. Hyperthyroidism(RGK)
8. Acromegaly(MALDA) (JGMC)
9. Cushings syndrome(CMSDH)
10. Neuronal deficits of glucocorticoids. (NRS)
11. HbA1c(NRS)
12. Dwarfism (JGMC))
13. Conn's Syndrome (NBMC)

EXPLAIN WHY (3 MARKS)

1. Polyphagia occurs in DM.(KPC)(kalyani)
2. Hyperpigmentation is seen in Addison's disease.(MSD)
3. Diuresis occurs in diabetes mellitus.(RGK)
4. Thyroid dwarfs are mentally retarded(JOKA)
5. Steroid therapy is always withdrawn gradually (JOKA)
6. Oedema does not occur in conn's syndrome.(MCK)
7. 5-alpha reductase inhibitor is used in the treatment of benign hyperplasia of prostrate.(IPGMER)
8. Lugol's iodine solution is used before thyroidectomy.(MALDA)
9. Why there is no edema in Conn's Syndrome.(MMC)
10. Adequate preparation is required before surgical resection of thyroid of a patient with thyrotoxicosis. . (NRS)
11. Oral glucose stimulates more secretion of insulin than IV glucose. (NBMC)

REPRODUCTIVE SYSTEM

SHORT ANSWER TYPE (7 MARKS)

1. List the stages of spermatogenesis. Write briefly its hormonal regulation.(4+3)(KPC)
2. Describe the ovarian changes during menstrual cycle? What is 'anovular cycle' ? (5+2)(BMC)
3. Describe the process of spermatogenesis. What is blood testis-barrier? [5+2](MSD)
4. Humoral control for continuation of pregnancy.(RGK)
5. Spermatogenesis is hormonally regulated.(RGK)
6. Define the menstrual cycle. What are the phases of menstrual cycle ?Describe the ovarian changes during menstrual cycle?1+1+5 (JOKA)

7. Describe the follicular phase of ovarian cycle with labeled diagram .Explain the functions of Granulosa and theca cells. 4+3(IPGMER)
8. Write about the hormonal changes in menstrual cycle.(MMC)
9. Write about the roles of different hormones in development of breast and lactation. What is lactational ammmenorhea and its physiological basis?4+3(CMSDH)
10. Describe briefly the different phases of menstrual cycle with diagram. What is ovulation? What are indicators of ovulation?(4+1+2) (NRS)
11. What is spermatogenesis? Describe its hormonal control. What is blood testis barrier? (JGMC)(NBMC)

SHORT NOTES (3 MARKS)

1. LH Surge (kpc)
2. Spermatogenesis(MALDA)
3. Sertoli cells (BSMC)(CMSDH)
4. Feto-placental unit(CNMC)(MMC)
5. Milk ejection reflex(CNMC)
6. Blood testis barrier(MCK)
7. Regulation of milk secretion and ejection(IPGMER)
8. Corpus luteum(MALDA)
9. Oral contraceptive pills (JGMC)
10. Evidences of ovulation (NBMC)

EXPLAIN WHY (3 MARKS)

1. Ovariectomy within 6 weeks of pregnancy causes abortion.(bmc)(BSMC)
2. Pregnancy usually does not occur during lactation.(CNMC)(JGMC)
3. Osteoporosis is common in post menopausal women. (MSD)
4. Chances of pregnancy is less in regularly lactating mother.(MALDA)
5. Breast feeding acts on physiological birth control.(MMC)
6. Temporary stoppage of menstruation is seen mostly during the first 6 months of lactation.(NBMC)

Unite,Raise your Voice and Stop Ragging

NERVOUS SYSTEM

LONG QUESTION (12Marks)

1. Name the ascending tracts of spinal cord and the sensation they carry . Trace with a diagram the pathway of pain from receptor to cerebral cortex. What is syringomyelia? (4+6+2)(KPC) .
2. Write down the connections,functions and effects of lesions of the basal ganglia. Give a note on copper intoxication of basal ganglia. (3+3+4+2)(BMC)
3. Describe the connections of basal ganglia with diagram. Discuss the functions of basal ganglia. (6+2+4+)(BSMC)
4. Describe the pain Pathways with diagram. What is stress analgesia ? (6+2+4)(BSMC)
5. What are the functional subdivision of cerebellum? Show the to and fro connections of the cerebellum with proper diagram. Enumerate the functions of the cerebellum and the clinic manifestation following it's lesion. (2+3+3+4)(CNMC)
6. Mention the different Nuclei of basal ganglia. Describe the connections & functions of basal ganglia. Why parkinsonism is associated with both hypo & hyperkinesias? [3 + 5 +4] (MSD)
7. Draw a principal connections of basal ganglia and another of the cellular connections of cerebellum, highlighting their control of motor activities.Try to guess why features of their lesions differ.(RGK)
8. Describe the functional divisions of Cerebellum. Draw a schematic diagram showimg the neural connections in the cerebellum.Describe the principal afferent systems of cerebellum.Define Cerebellar ataxia and describe the clinical features.3+3+3+3(MCK)
9. Enumerate the nuclei of Hypothalamus.Mention the functions of hypothalamus. How plasma osmolality is maintained by hypothalamus.3+4+5(MCK)
10. What are the functional divisions of cerebellum? Describe the connections and functions of cerebellum.Add a note on Crebellar dysfunction.(JOKA)
11. Outline the non endocrine function of hypothalamus.Give details about regulation of apetite 6+6(IPGMER)
12. Explain the functions of basal ganglia from their circuits. Explain the features of parkinsonism on physiological basis. 8+4(IPGMER)
13. What are the functional subdivisions of cerebellum? With diagram show the afferent and efferent connection of cerebellum. Enumerate the signs of cerebellum dysfunction.3+3+3+3(malda)
14. Enumerate sleep-wakefulness stages. Present the hypothesis regarding genesis of sleep-wake cycle by a flowchart. State the ECG changes associated with sleep-wake cycle. 4+4+4(MALDA)
15. Write the methods of Sherrington and ischemic decerebrate rigidity. Why flexion of upper limbs occur after decortication4+4+4(MDN)
16. List the functions of hypothalamus .Describe the role of hypothalamus in the regulation of food intake and the control of endocrine functions.4+4+4(cmsdh)
17. Trace with a labeled diagram the dorsal column lemniscal pathway. Which sensations are carried through this? What is Tabes dorsalis?(5+3+4)(NRS)
18. Describe with diagram the origin course and termination of pyramidal tract.What are the features OF UPPER MOTOR NEURON LESION? Differentiate between spasticity and rigidity . What is the physiological basis of spasticity?(5+3+1+3) (NRS)

19. Enumerate the neuclei of basal ganglia? What are the connections of basal ganglia? Describe the function of basal ganglia?(JGMC)
20. What is EEG? Describe the normal waves of EEG? what is alpha block? Enumerate features of REM sleep? (JGMC)
21. Give an brief account of the origin, course & termination of pyramidal tract along with diagram. What is Balbinski sign ? (3+3+3+3) (NBMC)

SHORT ANSWER TYPE (7 MARKS)

1. Explain with suitable diagram the clinical features of Brown-Sequard syndrome.(CNMC)
2. Enumerate the functions of hypothalamus. How body temperature is regulated by hypothalamus ? [3+4] (MSD)

SHORT NOTES (3 MARKS)

1. Renshaw cell inhibition (MMC)
2. Aphasia(KPC)(JOKA)
3. EEG Waves (KPC)(nrs)
4. REM sleep(BMC)(BSMC)(CMSDH)
5. Gate Control theory of pain(BMC)(CNMC)(malda)
6. Decerebrate rigidity(BSMC)
7. Presynaptic facilitation (MSD)
8. paradoxical sleep (MSD)
9. Circum ventricular organs(RGK)
10. Memory :Classification and biological basis(MCK)
11. Muscle spindle(JOKA)
12. Central Analgesia system(JOKA)
13. Spastic paralysis(IPGMER)
14. Duchene smile(IPGMER)
15. Speech disorder(CMSDH)
16. EPSP(CMSDH)
17. NERM sleep (NBMC)
18. Feeding and satiety. (NRS)
19. Homonymous hemianopia(JGMC)

EXPLAIN WHY (3 MARKS)

1. L-Dopa is useful in the treatment of parkinsonism.(KPC)
2. Finger nose test is abnormal in cerebellar disease.(KPC)
3. An amputee may complain of intolerable pain in the absent limb.(BMC)/ After amputation of a limb a patient sometimes complains of pain and other sensation in the amputated limb.(CNMC)(MSD)

4. Rubbing of painful site give some relief.(BSMC)(IPGMER)
5. Use of carbidopa is commonly done with L-Dopa in treatment of parkinsonism.(cnmc)(NBMC)
6. Severe stretch of a muscle may cause its relaxation.(RGK)
7. E.E.G recording during REM sleep differs that from that of NREM sleep.(RGK)
8. Deep reflexes are exaggerated on the hemiplegic side.(RGK)
9. Myocardial ischemia may produce pain at the inner side of the arm.(RGK)
10. Amputees may feel sensations arising from missing limb.(RGK)
11. Dissociated anasthesia found in syringomyelia.(MCK)(JGMC)(cnmc)
12. Gentle rubbing over an inflamed area reduces the pain sensation(MCK)
13. Cerebral hemisphere are structurally and functionally asymmetric. (MCK)
14. Bradykinesia occurs in Parkinsonism.(JOKA)(MALDA)
15. Combined therapy of L-DOpa and L- deprenyl in the treatment of parkinsonism.(CMSDH)
16. Intercollicular transaction in cat causes rigidity of muscles.(CMSDH)
17. Intensity of pain is diminished by simultaneous pain sensation. (NRS)

SPECIAL SENSE

SHORT ANSWER TYPE (7 MARKS)

1. What is photo transduction? Explain how light energy is converted into action potential.(2+5) (KPC)
2. Describe the auditory pathway with suitable diagram. How will you differentiate between conduction deafness and nerve deafness ? (5+2)(BMC)
3. Describe the steps of phototransduction process.7(BSMC)
4. Describe the pathway of Light reflex and accommodation reflex. What is Argyll-Robertson pupil? (3+3+1)(CNMC)
5. Draw and describe visual pathway. what are the effects of lesion on it at different site ? [4+3] (MSD)
6. Trace the neural pathway that transmit visual information from photoreceptors to the visual cortex. Explain the Visual Field Defects produced by lesions at different levels of optic pathway.3+4(JOKA)(NBMC)
7. Name the photosensitive pigments found in retina. Briefly describe the sequence of events involved in phototransduction process in rods and cons.2+5(MALDA)
8. Describe photochemical changes in retina . What is blindness?5+2(CMSDH)
9. Briefly describe the functions of middle ear. Add a note on mechano electrical transduction at the organ of Corti with proper diagram .What is masking?(2+4+1) (NRS)

SHORT NOTES (3 MARKS)

1. Organ of Corti (KPC)(MSD)(MMC)
2. Dark adaptation(BMC)

3. Sound transduction in human ear(CNMC)
4. visual acuity(RGK)
5. Vestibulo-ocular reflex(RGK)
6. Olfactory pathways(RGK)
7. Dark current(MCK)
8. Basilar membrane(MCK)
9. Functions of Middle ear(JOKA)
10. Presbyopia(IPGMER)(MMC)
11. Cochlear microphonics(IPGMER)
12. Impedance matching (NBMC)

EXPLAIN WHY (3 MARKS)

1. Reading and close work become difficult in around 45 years.(bmc)
2. Pituitary tumour causes bitemporal hemianopia.(KPC)(BSMC)
3. Near point recedes throughout life.(JOKA)(MALDA)
4. Middle ear acts as an acoustic impedance matching device.(IPGMER)
5. Perception of odour decreases with time of exposure.(IPGMER)
6. Action potential of retina is formed by hyperpolarization.(MMC)
7. Red flowers appear black in dark. (NRS)
8. Smell is impaired after laryngectomy (JGMC)

"The situation which is confronting medicine today is a contest of two forces in the medicine itself. One holds that the important thing is the maintenance of our vested historical interest, our privet property, our monopoly of health distribution. The other contends that the function of medicine is greater than the maintenance of doctor's position , that the security of the people's health is our primary duty ,that we are above professional privileges…" **-Dr. Norman Bethune**

BIOCHEMISTRY 1st and 2nd semester Chapterwise sorted Question Papers (Brought to you by ALL INDIA DSO)

SECTION 1: Chemistry of Carbohydrates, Lipid and Amino acids

LONG QUESTION (12 MARKS)

a)Describe various forms of isomerism exhibited by carbohydrates. What is mutarotation? Name the carbohydrates present in glycoprotein. (8+2+2)(MSDMCH)
b) Classify membrane lipids with examples. Indicate the structure and function of surfactant. Discuss the role of phospholipid in maintaining fluidity of plasma membrane. 5+2+5

LONG QUESTION (7 MARKS)

a) Classify fatty acids in various ways with examples of each class. (7)
b)) Classify phospholipid and mention their important functions. (3+4)(CNMC)
c) Name the lipids present in plasma membrane. State their role in maintaining the fluidity of plasma membrane.(3+4)(MSDMCH)
d) Classify glycolipids. What is saponification number? 5+2(NRS)
e) Classification of phospholipid among with their function and example(JGMC)
f) How polysaccharide are classified? Enumerate the difference between proteoglycan and glycoproteins.(JGMC)

SHORT NOTE (3 MARKS)

a)Glycosaminoglycans.(BMC)
b) Mutarotation.(MCK)
c) The sugar code(NRS)
d) Aggrecan(CNMC)
e) Plasmalogen(MMC)
f) Liposome
g) Glycine is optically inactive(JGMC)
h) Glucose and fructose form same osazone(JGMC)

EXPLAIN WHY (3 MARKS)

a) Arachidonic acid is not a true essential fatty acid.(CNMC)
b) Sucrose is a non reducing sugar.(MSDMCH)
c) Brown fat is useful for neonates.(MCK)
d) Osteoarthritis is a GAG degenerative disease(NRS)

"SCRAP NMC BILL, Say no to Bridge course"

SECTION2: PROTEIN AND ENZYMES

LONG QUESTION (12 MARKS)

a) Enumerate the factors affecting the rate of enzyme substrate reaction . Describe the effects of substrate concentration on reaction rate with a schematic diagram. Explain why Linewaver-Burk plot is support to the Michelaes Menten's Curve for describing the enzyme kinetics. Mention the role of Iso-enzyme in diagnosis of diseases.(2+4+4+2)
b) Enumerate the IUB classification of enzymes. Mention the function of each class and give specific example along with the reaction catalyzed. Write a brief note on active site of enzyme. (3+6+3)
c) Derive Henderson Hasselbatch equation.Explain the application of this equation in understanding of buffering action.Draw the titration curve of Lysine.(MSDMCH)
d) Define the different level of protein structure. Enumerate the characteristics of alpha helix. Describe a physical method by which molecular weight of a protein may be determined.
4+5+3(Malda)
e) classify reversible and irreversible inhibition of enzyme catalysis. What is homotropic allosteric regulation? What is transition state analogue? 8+2+2(NRS)
f) Classify the types of mechanisms of regulation enzyme action in vivo .Give exploration of each type with proper examples.2+10(MMC)
g) i)State the class in which following enzymes belong.
Fumarase ,glucokinase , pepsin, lipase, phosphoglucomutase,aldolase
ii)Compare and contrast between allosteric regulation and covalent regulation of enzyme activity with examples.
iii)Name the rate limiting enzymes of gluconeogenesis and state the reaction catalysed by each of them.(3+6+3)(CMSDH)
h) What are the levels of organization of proteins? How the different levels of organization are stabilized? How would you determine the primary structure of proteins?4+5+3(JGMC)
i) Write the Michaelis menten equation. Explain different types of enzyme inhibitions using line weaver Burk plot with suitable example(JGMC)

LONG QUESTION (7 MARKS)

a) Classify enzymes with examples of each class. What is international unit of an enzyme? (5+2)
b)) Mention the structural characteristics of collagen. Write down the difference between it and alpha helix. (4+3)
c) Describe the primary, secondary and tertiary structure of collagen. List the bonds maintaining tertiary structure of protein. (5+2)(MSDMCH)
d) Give a brief outline of the steps required for sequencing a polypeptide chain.(MSDMCH)
e) Describe the mechanism of inhibition of enzyme activity with suitable exam.(MCK)
f) Classify oxido-reductase group of enzymes with example nd mechanism of action in brief.(MCK)
g) What are the different types of enzyme inhibitors. Explain their role with clinical examples.
2+5(Malda)
h) Discuss how aminoacid sequence of a protein determines it's 3D structure? 7(NRS)
i) Differentiate between competitive and non competitive inhibition. Explain with examples therapeutic significance of competitive inhibition.5+2(IPGMER)

j) Mention the steps in determining the primary structure of protein.(Chemical methods) Mention the techniques of determining higher order of structure of protein.5+2(MMC)
k) Briefly describe the different orders of protein structure with a suitable example.Enumerate any two diseases than can occur due to misfolding of proteins. 5+2(RGKAR)

SHORT NOTE (3 MARKS)

a) Peptide Bond(BMC)
b) Secondary structure of protein(BMC)
c) Competitive inhibitors as drugs(BSMC)
d) Michaelis mention equation(Malda)
e) Determination of N-terminal of amino acids(KPC)
f) Marfan Syndrome(Kalyani)
g) Lysyl oxidase(Kalyani)
h) Suicidal inhibition of enzyme(Kalyani)
i)Collagen(IPGMER)
j)Allosteric regulation(IPGMER)

EXPLAIN WHY (3 MARKS)

a) Competitive inhibition of enzyme can be exploited therapeutically(BMC)
b) Sucrose is non reducing as well as invert sugar.(BMC)
c) Collagenous triple helical structure.(BSMC)
d) Proteins are precipitated from their solution at pI.(MSDMCH)
e) Co- enzymes are co substrates.(CMSDH)
f) Collagen has quarter staggered formation.(CMSDH)
g) All enzymes are not proteins (JGMC)

SECTION3: VITAMINS AND ANTIOXIDANTS

LONG QUESTION (7 MARKS)

a)How does Vit D controls Calcium and Phosphorus metabolism. What is the role of lipids in Vit D absorption?5+2(MMC)
b)What is the role Vit B12 in metabolism of odd chain fatty acids? How is Glycine metabolism linked with Folate metabolism?4+3(MMC)
c)Describe in details the activation of vitamine D and discuss it's functions(KPC)
d) Write down the process of synthesis of active form of vitamin D3. State the role of Vit D3 in the regulation of serum calcium.(3+4)(CMSDH)
e) Write down the process of absorption , transport, in circulation, storage and delivery of vitamin B12.(CMSDH)
f) A 3yrs old girl child has failure to thrive and an unusual gait. On examination, it was seen that she had bowed leg, thick wrist and Dental caries.
What is the provisional diagnosis? What blood investigation will you order to establish the diagnosis. Discuss the role of vit D in bone mineralisation.(1+2+4)(ESI JOKA)

SHORT NOTE (3 MARKS)

a) Antioxidants (NBMCH)

b) Metabolic role of Pyridoxine.(MCK)

c) Folate is a co-enzyme (Malda)

d) Antioxidant function of Vit.E (Malda)

e) Reactions catalysed by pyridoxal phosphate.(NRS)

f) Wald's visual cycle, (CMSDH)

g) Folate trap(RGKAR)

h)Thiamine deficiency s detected by measuring transketolase enzyme in the blood(JGMC)

i)Sources of NADPH,and it's function(ESI JOKA)

EXPLAIN WHY (3 MARKS)

a)Vitamin A and D also considered as hormones .(NBMCH)

b) Symptom of pellagra maybe seen in carcinoid syndrome.(BSMC)

c) Vit A is essential for maintaining the normal visual cycle in humans.(CNMC)

d) Vit-C deficiency leads to defective collage function

e) Men and higher Primets can not synthesize ascorbic acid.(KPC)

f) Warfarin is an antidote of Vitamin K.(NRS)

g) Vit B12 deficiency may lead to methyl malonyl aciduria.(MMC)

h) Intake of selenium is necessary for antioxidant activity.(CMSDH)

SECTION 4: CELL & BIOMEMBRANES

LONG QUESTION (12 MARKS)

a) Describe the various Modes of transport of molecules across the cell membrane with diagrammatic illustration. (12)

b) Outline fluid mosaic model of plasma membrane with diagram. Give a brief account of all factors for maintenance of membrane fluidity. Give example of active transport. (6+4+2)(BSMC)

c) Explain how you can separate different subcellular components using different centrifugation techniques with a suitable diagram. Write down the markers for the different subcellular organelle. (7+2+3)

d) Describe in brief the different structural lipids and proteins found in cell membrane and their functional importance (IPGMER)

LONG QUESTION (7 MARKS)

a)Discuss briefly the membrane fluidity is controlled by fatty acid composition and cholesterol content.7(NRS)

b) Write down the structure of three membrane phospholipids. Mention the role of different types of membrane lipids for maintenance of fluidity of membrane.(COMSD)

c) Describe the fluid mosaic model of cell membrane. Add a note on the Active transport.5+2(KPC)

d) Discuss the various processes with examples of transport across the call membrane(KPC)

SHORT NOTE (3 MARKS)

a) Active transport of membrane (MSDMCH)

b) Membrane fluidity.(MCK)

c) Fluid mosaic model of plasma membrane (KPC)

d) Carrier mediated endocytosis(NRS)
e) Donnan membrane equilibrium(MMC)
f) Ion channels(MMC)
g) Na^+/K^+ ATPase(RGKAR)
h) What is receptor mediated endocytosis, discuss it in terms of its clinical significance.

SECTION 5:HORMONES AND RECEPTORS

LONG QUESTION (12 MARKS)

a)Discuss the role G protein, adenylate cyclase and phospholipase C in signaltransduction.4+4+4(Murshidabad)

LONG QUESTION (7 MARKS)

a) Discuss the role G protein, adenylate cyclase in signal transduction pathway.(Malda)
b)Mention the second messengers through which Group II hormones act.How epinephrine exerts its action.4+3(NBMCH)
c)Classify hormones .What is second messenger.Describe the mechanism of action of hormone through anyone second messenger.3+1+3(KPC)
d)Mention the normal level of serum calcium .Outline the role of cholecalciferol and parathormone inmaintaining calcium hemostasis.(2+5)(BSMC)
e) Explain with diagram the role ca^{2+} second messenger.7(IPGMER)
f) Mention the role of cAMP as second messenger.(NRS)
g) . Discuss the amphibolic role of TCA cycle . Mention few Anaplerotic reactions associated with it. (6+6)(ESI JOKA)

SHORT NOTE (3 MARKS)

a)G-protein (NBMCH)
b) cGMP as second messenger(CNMC)
c) Describe malate aspartate shuttle and discuss its importance (ESI JOKA)

EXPLAIN WHY (3 MARKS)

a)Insulin receptor has enzymatic activity.
b)Calcium is mediator of hormone action . (MCK)
c) Cholera toxin acts through signal transduction pathway(Malda)
d) Q cycle(CNMC)
e) Receptor enzymes(CNMC)
f) G protein coupled receptor(JGMC)
g) Reducing equivalents are transferred to mitochondria via shuttle system(JGMC)
EXPLAIN WHY (3 MARKS)
a) Insulin receptors and dormant enzyme activity.

SECTION 6: ELECTRON TRANSPORT SYSTEM

LONG QUESTION (12 MARKS)

a) Discuss the chemi-osmotic model of synthesis of ATP. What is P: O ratio? What is physiological uncoupling proteins (UCPs)? 8+2+2(NRS)

b) Briefly describe the components of the electron transport chain of inner mitochondrial membrane. Draw a diagram showing flow of electron. Mention the name of inhibitors of each complex. Mention name of two uncouplers .6+2+3+1(MMC)
c) Illustrate the pathway of electron flow through the different complexes of electron transport chain. Enumerate any two compounds which uncouple the ETC from oxidative phosphorylation.5+2(RGKAR)
d) How reducing equivalents from various metabolic pathway are destined to generate energy in the form of ATP? Illustrate with suitable diagram the various complexes of electron transport chain. Enumerate the inhibitors of ETC? Highlight the major difference between the inhibitors and uncoupler of ETC (JGMC)

LONG QUESTION (7 MARKS)

a) Mention the composition of each complex of respiratory chain in mitochondria. Name an uncoupler and an inhibitor of complex II. (6+1)(MSDMCH)
b) What is oxidative phosphorylation and how does uncouplers modify it? Enumerate the complexes and reactions catalyzed by them in the electron transport chain. 3+4(Malda)
c) Describe the components of ETC. Add a note on inhibitors of each complex.(KPC)

d) SHORT NOTE (3 MARKS)

a) Complex 1 of electron transport chain (BMC)
b) Second messengers (BMC)
c) Cyclic nucleotide as second messenger.(MCK)
d) Chemiosmotic Theory(KPC)
e) Anaplerotic reaction(CMSDH)

EXPLAIN WHY (3 MARKS)

a)TCA cycle is called amphibolic in nature(BSMC)(NRS)
b) Chemosmotic theory explains the mechanism of oxidative phosphorylation.(CNMC)
c) Anaplerotic reactions in the TCA cycle helps in maintaining the blood glucose level during fasting condition.(CNMC)

SECTION 7:HEMOGLOBIN & JAUNDICE

LONG QUESTION (12 MARKS)

a)Describe the Oxygen haemoglobin dissociation curve .Explain the role of 2,3BPG in oxygen binding of haemoglobin.Explain the molecular mechanism of Sickle cell anaemia.6+3+3(MCK)
b)Protein folding is dictated by primary sequence-explain.compare myoglobin and haemoglobin –mentioning their secondary and tertiary structures.Quarternary structure of haemoglobin is responsiblefor oxygen binding and release-Explain.Give abrief account of importance of super secondary structures of protein.3+3+3+3(R.G.KAR MC)
c)Describe the structural and functional similarities and dissimilarities of haemoglobin and myoglobin.Explain the role of 2-3BPG in oxygen binding of haemoglobin.Indicate the molecular mechanism of sickle cell anemia.7+2+3

d)Briefly illustrate the salient features of oxygen binding curve of haemoglobin& myoglobin.How does 2,3 bisphosphoglycerate affect oxygen binding to haemoglobin?What are the Bohr& Haldane effects?6+2+4

LONG QUESTION (7 MARKS)

a) Describe the process of bilirubin synthesis and fate of bilirubin in human. Define Jaundice. (5+1)(CNMC)

b) How does the structures of haemoglobin and myoglobin influence their biological activities.(KPC)

c)Discuss the role of 2,3-BPG in determining oxygen affinity of haemoglobin. What is HbA1C? 5+2(NRS)

d) Describe the biosynthesis of heme. Add a note on regulation heme synthesis.(4+3)(IPGMER)

e) Draw oxy-hemoglobin dissociation curve. Name the factors which cause rightward shift of the curve.Explain the role of 2,3 DPG in the regulation of oxygen affinity Hb A and Hb F.Explain "R" and "T" form of hemoglobin and factors that favours R form over T form.(CMSDH)

f)Describe the metabolic pathway of heme synthesis and indicate how it is controlled.(JGMC)

g)) Define porphyria. Mention different types of porphyria with different types of enzyme deficiency.2+5(MMC)

SHORT NOTE (3 MARKS)

a)Oxygen dissociation curve

b) sickle cell anemia(Malda)

c) Van den bergh reaction(Malda)

d)Bohr effect(IPGMER)

e)Acute intermittent porphyria(IPGMER)

f) Laboratory investigation in suspected case of acute intermittent porphyria(CNMC)

g)Hyperbilirubinemia(JGMC)

EXPLAIN WHY (3 MARKS)

a) Structure function relationship can be explained by hemoglobin and myoglobin.(BMC)

b) Urobilinogen is absent in obstructive jaundice

c) Heme binds with carbon monoxide 2900 times more strongly than oxygen when it is isolated, but only 200times more when it is in myoglobin as hemeoglobin(MMC)

d) Phototherapy is beneficial treatment of neonatal jaundice.(RGKAR)

SECTION 8:GENETICS

LONG QUESTION (12 MARKS)

a) What are transcription elements and transcription factors ? Write the steps of RNA synthesis in Prokaryotes. Mention different post transcriptional modifications. (2+6+4)(NBMCH)

b) Describe in brief the process of translation in prokaryotes. Mention the role of different antibiotics in this process. (4+8 (BMC)

c) Explain Watson Crick double helix model of DNA structure. Give a brief account of proteins in replication fork and their functions. Explain the role of telomerase. (5+4+3)(BSMC)

d) Describe the process of translation in prokaryotes. State the mechanism of action of following antibiotics in invasion of translation

1. Streptomycin
2. Erythromycin
3. Chloramphenicol(BSMC)

b)) Describe in detail about DNA dependent RNA Polymerase in Prokaryotes and its role in prokaryotic transcription along with the prokaryotic promoters.Describe in short the post transcriptional modification in eukaryotic m-RNA. 3+3+2+4(MSDMCH)

c) Write about the various forms of DNA. Describe in detail the structure of the most predominant form of DNA with suitable diagram.(MSDMCH)

d) Replication is semi conservative in nature- write the experimental basis of it. Enumerate different DNA repair mechanisms and illustrate any one of them.6+6 (MCK)

e) describe different types of post transcriptional processing of mRNA. How lactose metabolism is regulated in E.coli through regulation of transcription? 5+7(MCK)

f) Whate are the promoter and operator sites in a DNA ? describe initiation and termination of transcription. What is sigma cycle? Name two inhibitors of transcription. 2+6+2+2(Malda)

g) Describe in detail translation process of Eukaryotic cell . Add a note on different types of mutation.(KPC)

h) Describe the formation of replication fork of DNA. Compare the functions of DNA polymerase I & III. Enumerate the inhibitors of DNA replication .6+4+2(IPGMER)

i) Briefly describe the elongation steps of eukaryotic translation. State different post transcriptional processings of mRNA. 7+5(IPGMER)

j) Xeroderma pigmentosa results from defective DNA repair(IPGMER)

k) Enumerate the different types of mammalian RNA polymerase and mention their functions. Mention the effect of amanitin on each type. Describe the initiation of prokaryotic transcription . Mention the post transcriptional modifications in mammalian system.3+3+3+3(MMC)

l) Describe the steps of transcription in prokaryotes. Enumerate the post-transcriptional modifications in eukaryotes. Compare and contrast the differences of translation in prokaryotes and eukaryotes.(6+3+3)(COMSDH)

m) Write about the various forms of DNA.Describe in detail the most predominant form of DNA with suitable diagram.(MCK)

n) Enumerate the salient differences between the initiation of translation in prokaryotes & eukaryotes. Briefly describe the various post-translational modifications occurring in newly synthesized collagen. What is adaptor hypothesis?6+4+2(RGKAR)

o) Describe briefly various post-translational modification occuring in newly synthesized eukaryotic hnRNA.Explain the significance of RNA editing with one pertinent example.Name one inhibitor of prokaryotic and one inhibitor eukaryotic transcription.7+3+2(RGKAR)

LONG QUESTION (7 MARKS)

a) What is gene and what is lac operon ? Describe with lac operon model how gene expression is controlled in prokaryotes ? (1+1+5)

b) Outline the steps in folding of a nascent protein into mature one. Explain the clinical importance of the process. (3+4)

c) Give a brief account of different types of mutations with examples.
d) Elucidate the salient features of DNA with help of a diagram.(MSDMCH)
e) Describe the Watson and Crick model for the structure of DNA. Compare this with other three-dimensional forms of DNA structure. 4+3(Malda)
f) Describe the synthesis of gene.(KPC)
g) Enumerate the types of RNA in our body. Mention the function of each type of RNA.3+4(MMC)
h) Enumerate the different causative agents behind DNA damage.Describe with suitable examples, nucleotide excision and mismatch repair of DNA.What is pathogenetic mechanism behind xeroderma pigmentosum.2+4+1(RGKAR)
i)Enumerate briefly the DNA replication enzymes.Indicate the different mechanisms of DNA repair.(JGMC)
j) Explain the biochemical mechanism how telomerase solves the problem of DNA shortening. Name the telomerase inhibitor used as anti cancer drug.(5+2)(ESI JOKA)

SHORT NOTE (3 MARKS)

a) 70S Initiation complex(NBMCH)
b) Silent mutation(BMC)
c) Nucleotide excision repair(BSMC)
d) t RNA structure(MSDMCH)
e) Pseudoneuclotide(NRS)
f)Telomerase(IPGMER)
g) Features of genetic codes(NRS)
h) Mitochondrial DNA(MMC)
i) DNA topoisomerase (RGKAR)
j) Northern blotting(RGKAR)
k) Lac operon(RGKAR)
l) Melting temperature of DNA
m)Genetic code is degenerate.(JGMC)
n) Enumerate the post translational modification, discuss at least two of them in detail.(ESI JOKA)
o) Mention the types of DNA mutations with examples. Add a note on mismatch repair mechanism.(ESI JOKA)

EXPLAIN WHY (3 MARKS)

a)DNA is much more stable than RNA.(NBMCH)
b) Histamine is the most suitable amino acid buffer.(CNMC)
c)HbS is an example of partially acceptable missense mutation(MSDMCH)
d) In spite of point mutation there may be no change in polypeptide product of gene.(MMC)

SECTION 9:CARBOHYDRATE METABOLISM

LONG QUESTION (12 MARKS)

a) Outline the pathway of breakdown of glycogen in liver. Describe its regulation. How glycogen present in muscle differs from that of liver? (4+4+4)(BMC)

b) Describe briefly how pyruvate is converted to acetyl coA. Discuss how pyruvate dehydrogenase is controlled.(Malda)

c) What are the non carbohydrate substances that produces glucose in our body? Describe the process in details. Add a note on its regulation. 2+7+3(KPC)

d) A patient of Malaria developed significant anemia in spite of good therapeutic response with Primaquin. What is the probable deficient factor? Enumerate in detail metabolic steps of an important pathway where the above mentioned factor is required. How the pathway is regulated? What are the major functions of the pathway? 1+5+3+3(Kalyani)

e) Establish that gluconeogenesis is not a reversal of glycolysis. Calculate the energy required for synthesis of one molecule of glucose from two molecules of puyruvate. Explain why even chain fatty acid can't be the substrate for gluconeogenesis(IPGMER)

f) Enumerate the fates of acetyl-CoA . Describe one pathway leading to one of the fates. Describe the regulation of the pathway.4+4+4(MMC)

LONG QUESTION (7 MARKS)

a) Outline the key enzymes in gluconeogenesis. Explain why phosphofructokinase is a bifunctional enzyme and how is it regulated. (3+4)(BSMC)

b) Describe how fructose and galactose enter into the glycolytic cycle. Mention the disorders associated with their metabolism in humans.(2+2+3)(CNMC)

c) Explain co-ordinated regulation of glycolysis and gluconeogenesis in liver by Fructose 2,6-bisphosphate . PFK 2 & Fructose 2,6-bisphosphatase.(MSDMCH)

d) Enumerate the components of PDH complex. Describe the regulation of PDH complex.(4+3)(MMC)

e) Define gluconeogenesis. Mention four non-carbohydrate sources from which glucose can be synthesiszed . Describe the regulation gluconeogenesis.1+2+4(MMC)

f) Compare and contrast between Cori's cycle with glucose-alanine cycle(CMSDH)

SHORT NOTE (3 MARKS)

a) Glycosaminoglycans- medical importance(BSMC)

b) OGTT(BSMC)

c) Gaucher's disease(Malda)

d) Incretins(NRS)

e)PDH complex(Kalyani)

f)Hereditary Fructose intolerance(IPGMER)

g) Glycosylated haemoglobin(CMSDH)

EXPLAIN WHY (3 MARKS)

a) Insulin lowers the blood glucose levels.(NBMCH)

b) Defective pentose phosphate pathway may lead to haemolytic anaemia.(BMC)

c) Impaired pentose phosphate pathway leads to erythrocyte haemolysis(BSMC)

d) Uncontrolled Diabetes mellitus causes cataract.(BSMC)

e) Fiber diet is prescribed in DM and hyperlipidemia.(CNMC)

f) Plasma glucose concentration regulates insulin secretion precisely.(MSDMCH)

g) Phosphofructokinase is known as Pacemaker of Glycolysis.(MCK)

h) Glycosaminoglycans have important physiological roles to play.(Malda)

i) 2,3 BPG is associated with oxygen release(IPGMER)

j) Hypoglycemia occurs in new born with classical galactosemia(IPGMER)
k) Active absorption of glucose is powered by sodium pump.(NRS)
l) Rappaport lumbering cycle more active in erythrocytes.(MMC)
m) Galactosemia gives rise non-traumatic cataract in infants.(CMSDH)
n)Phosphofructokinase 2 is bifunctional enzyme(CMSDH)
o)Glucose -6-Phosphate dehydrogenase is responsible for membrane integrity in erythrocyte(JGMC)
p)Hyperglycemia may lead to formation of cataract in human lens(JGMC)
q) A 63 yr old male patient is brought unconscious to the emergency. Relatives gives a history of patient suffering from diabetes for past 20 yrs and is on insulin therapy for last 3 yrs. On examination,it is seen that he has a fruity odour,pulse rate of 100/min,and kaussmaul's breathing. On urine examination: sugar +++, pH =6.2,ketone body positive.
What is the probable diagnosis? Give biochemical basis for the signs and laboratory findings.(1+3+3)(ESI JOKA)
r) Role of glycogen in Muscles and Liver.(ESI JOKA)
s) Substrate level phosphorylation(ESI JOKA)

SECTION 10: AMINO ACID METABOLISM

LONG QUESTION (12 MARKS)

a) Explain why Ammonia is a toxic product in humans. Describe the urea cycle in the context of- a.Site of occurrence / b.Energetics /c. Regulation by N acetyl glutamate / d. Amino acids involved.(4+2+4)(CNMC)
b) How ammonia is formed and detoxified in body? How is it regulated? Add a note on the disorders associated with it.
c) In general medicines OPD a 2 years violent male child was presented with self mutilating activities. What is the probable diagnosis? What is the mode of Inheritance of it? Describe in detail the biochemical defect associated with. What is the usual prognosis of the disease?1+1+4+1(Kalyani)
d) Give an account of Teansamination reaction. Give suitable examples. Briefly state the clinical application of transaminase estimation.3+1+3 (IPGMER)
e) Write in detail the different reactions by which ammonia is produced. Write the steps and number of ATPs utilized in urea cycle. Why NH3 is toxic to CNS.6+3+3(NRS)
f))Describe the pathway of synthesis of atleast two biologically important compounds from tyrpsine.Briefly elucidate the underlying Biochemical defect in alkaptonuria?Explain the term ochronosis.8+2+2(RGKAR)
g)Describe the metabolic reactions by which ammonia is formed and subsequently utilized in the body.Indicate the conditions which lead to hyperammonemia.Explain why ammonia intoxication is life threatening?2+6+2+2(JGMC)
h) Describe the process of transportation of ammonia and mention the chemical basis of ammonia toxicity . Describe the metabolic pathway of detoxification of ammonia. Mention the defects of this pathway. (3+2+5+2)(ESI JOKA)

LONG QUESTION (7 MARKS)

a) How ammonia is detoxified in our body ? Why ammonia is toxic ? (4+3)(NBMCH)

b) Give the steps of synthesis of important products from tryptophan . What is Hartnup's disease ? (6+1)(NBMCH)
c) Outline the catabolic pathway of phenylalanine with mention of disorders related with it. (4+3)(BMC)
d) Outline the pathway of urea cycle. Mention the disorders of the cycle with clinical outcome.(BMC)
e) Describe the role of Folic acid in one carbon metabolism in humans. Enumerate the biochemical importance of S-adenosyl methionine. (6+1)(CNMC)
f) Enumerate important biomolecules derived from glycine.Describe the synthesis of creatinine (flow chart only) 2+5(MSDMCH)
g) Explain various pathways of detoxification of ammonia in our body.(MCK)
h) Write down with a flow chart the stage of catabolism of carbon skeleton of phenylalanine mention the specific steps which are blocked in phenylketonuria and alkaptonuria. 5+2
i) Enumerate causes of Phenylketonuria.Mention the different laboratory test s to detect phenylketonuria.3+4(MMC)
j) Outline the steps of synthesis of catecholamines and the name the enzymes and co enzymes involvced in its synthesis(6+1)(CMSDH)
k)Describe the biosynthesis and degradation of catecholamines.(JGMC)
l) . Describe the metabolic importance of tyrosine and tryptophan. Add a note on metabolic defects of aforesaid amino acid metabolism.(ESI JOKA)

SHORT NOTE (3 MARKS)

a) Mapple Syrup Urine Disease (ADA Deficiency)(NBMCH)
b) S-adenosyl methionine(BMC)
c) CPS-I(Carbamoyl phosphate synthase-I)initiate urea biosynthesis(MSDMCH)
d) gama-Glutamyl cycle.(MCK)
e) Transmethylation,(CMSDH)
f) Alkaptonuria(BSMC)(MSDMCH)
g) One carbon metabolism(KPC)
h)Malate Aspartate shuttle(IPGMER)
i) Classical PKU(NRS)

EXPLAIN WHY (3 MARKS)

a) In pheochromocyoma uinary VMA level is increased.(MMC)
b) Ammonia intoxication gives rise to neurological manifestation.(CMSDH)

SECTION 11: LIPID METABOLISM

LONG QUESTION (12 MARKS)

a) How long chain fatty acids are transported into the mitochondria for beta oxidation ? Write the steps of beta-oxidation of a 16-carbon fatty acid. What extra steps are required for beta oxidation of unsaturated fatty acids ? How many ATPs are generated by beta oxidation of an oleic acid ? (4+4+2+2)

b) Give an account of fatty acid synthase complex. Describe the metabolic pathway for de novo synthesis of palmitate. (4+8)(BMC)

c) Enumerate schematically the activation, transport , reactions and energetics of B-oxidation of Fatty acids(taking Palmitic acid as an example). 2+3+5+2(MSDMCH)

d) Name different lipoproteins with their composition. Describe reverse cholesterol transport in details.What is familial Hyper−reverse cholesterol transport in details. What is hyper cholesterolemia.(KPC)

e) With help of the diagram describe formation, transport and metabolic fate of HDL. Write a note on reverse cholesterol transport. How LDL promotes atherosclerosis?(Kalyani)

f)Disscuss how HDL takes part in cholesterol metabolism. Ethanol causes fatty liver – justify. 8+4

g) Describe the steps of de-novo fatty acid synthesis with special reference to the multi functional enzyme complex in eukaryotes. What are the sources of acetyl Coa for fatty acid synthesis? (9+3)(CMSDH)

h)Givean account of the fatty acid synthase multienzyme complex. Describe the metabolic pathway for the de novo synthesis of palmitate in the body3+9(JGMC)

LONG QUESTION (7 MARKS)

a) Give the steps of formation of ketone bodies in liver and utilisation in peripheral tissues. Mention the causes of ketoacidosis. (3+3+1)(NBMCH)

b) Name different lipoproteins with their composition. Describe reverse cholesterol transport in details.W hat is familial Hyper−reverse cholesterol transport in details. What is hyper cholesterolemia.(KPC)

c) Give a brief account of absorption and digestion of lipid.3.5+3.5(IPGMER)

d) Explain the process of reverse cholesterol transport pathway. Enumerate different lipotropic factors.5+2(IPGMER)

e) Write down the steps of Beta oxidation of palmitic acid.(CMSDH)

f) With a neat diagram illustrate the process of formation and metabolism of HDL. State the biochemical basis of Tangier's disease.5+2(RGKAR)

g) Illustrate the mechanism by which the long chain fatty acids are able to enter mitochondria for beta oxidation. How is beta oxidation regulated in the body?

SHORT NOTE (3 MARKS)

a) Cartinine transporter.(MCK)

b) Statins in hyperlipidemia.(NRS)

c) Metabolic importance of HMG CoA reductase and it's regulation(CNMC)

d) If beta oxidation is hampered hypoglycemia may ocuur.(MMC)

e) Apolipoprotein(CMSDH)

f) Natural regulators of thrombin activity(RGKAR)

g)Lecithin is vital for lung maturity in neonate (RGKAR

h)HDL is involved in the reverse cholesterol transport.(JGMC)

i) Discuss the role of Insulin in regulating fatty acid synthesis.(ESI JOKA)

j) Workout the energetics of complete oxidation of palmitoyl CoA. Enumerate the differences between oxidation of saturated and unsaturated fatty acid.(ESI JOKA)

EXPLAIN WHY (3 MARKS)

a)HDL Cholesterol is called as good cholesterol.(BMC)
b) Regular consumption of alcohol causes fatty liver(BMC)
c) LDL is a bad cholesterol.(BSMC)
d) Beta oxidation and fatty acid synthesis generally do not run simultaneously.(CNMC)
e) Lipids can act as intracellular signal.(MSDMCH)
f) Statins are used to lower the serum cholesterol levels.(Malda)
g) Alcohol cause fatty liver (Malda)
h) Brown adipose tissue promote thermogenesis.(KPC)
i) Aspirin is a good anti-clotting agent.(KPC)
j) Fish oil is protective against myocardial infarction.(NRS)
k) Receptor SR-B1 has dual role in lipid metabolism(Kalyani)
l) Not all alcoholics develop Korsakoff psychosis.(Kalyani)
m) Both hyper and hypoglycemia can cause ketoacidosis(Kalyani)
n) Low dose aspirin is given to cardiac patient(IPGMER)
o) Ketone bodies serves as a fuel for extra hepatic tissues(NRS)
p) HMG-CoA inhibitors are used in the treatment of hyper cholesterolemia.(CMSDH)
q) ApoB48 is synthesized by RNA editing mechanism.(CMSDH)
r) Eskimos of Greenland are less prone to develop ischemic heart disease.
s) Enterohepatic circulation of bile pigment and bile salts/acids (ESI JOKA)
t)What is prostacyclin, mention its biological roles.(ESI JOKA)

SECTION 12:NUCLEOTIDE METABOLISM

LONG QUESTION (7 MARKS)

a)Describe the salvage pathway for purine nucleotide synthesis.Give a brief account of salient features of purine metabolism.
b)Outline the defects in biochemical pathway resulting Primary metabolic Gout.Mention the mechanism of action of Allopurinolused in treatment of Gout.5+2(MCK)
c)Draw a diagram of purine ring.Indicate the sources of various carbon and nitrogen atoms of the ring with numbering of each atom.How the ring is attached to ribose moiety of RNA.2+3+2
d) Describe the purine salvage pathway and any one of its disorders.(5+2)(MSDMC)
e) Mention the sources of Carbon and nitrogen atom in pyrimidine and purine ring. outline the steps of catabolism of purine nucleotides. (3+4)(CMSDH)

SHORT NOTE (3 MARKS)

a) Xanthine oxidase-clinical importance(BSMC)
b) Salvage pathway of purines(MSDMCH)
c) Metabolic fate of nitrogen from dietary proteins in human(CNMC)
d) Lesch nyhan syndrome(MCK)(RGKAR)
e) Cyclic AMP (CMSDH)

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EXPLAIN WHY (3 MARKS)

a) Gout is specific by excess intake of alcohol(BSMC)

b) Synthetic nucleotides are used as drugs.(MSDMCH)

c) Hyperuricemia occurs in Von Gierke's Disease(Malda)

d) Von Gierke's disease leads to gout(IPGMER)

e) Hyperuricemia found in patients of Lesch-Nyhan disease.

SECTION 13:MINERAL METABOLISM

LONG QUESTION (7 MARKS)

a) Describe in brief the absorption and transport of iron in our body. Indicate the markers of iron overload. (4+3)

b) Describe the process of absorption transport and storage of iron in the body. Describe how one carbon compounds are utilised in the body mentioning the name of the donors and acceptors of the compounds.

c) Discuss the roll of calcitriol and parathormone in the gut, bone and kidney with respect to calcium metabolism.(Malda)

d) Write the mechanism of absorption and transportation of iron. How iron is utilized in generation of free radicals (5+2)(NRS)

e) Describe the types , causes,clinical features of Your. Name the drugs used in its treatment. What is Lesch Nyhan syndrome? (4+1+2)(ESI JOKA)

SHORT NOTE (3 MARKS)

a) Iron absorption from the gut.(MSDMCH)

b) Wilson's disease(Kalyani)

c) Role of Vit D in calcium metabolism.(MMC)

EXPLAIN WHY (3 MARKS)

a)Ferritin and transferrin are reciprocally regulated. (MMC)

b) Hepcidin plays an important role in iron metabolism.(MCK)

c) copper is essential for iron absorption.(KPC)

d) Iron metabolism is dependent on copper(IPGMER)

e) Iron metabolism is regulatred at the level of intestinal absorption.(CMSDH)

f) . Menke's disease(ESI JOKA)

SECTION 14: XENOBIOTICS

LONG QUESTION (7 MARKS)

a) Name the various free radicals and describe scavenging mechanism for their removal.(MCK)

b) Explain the different phases of metabolism of xenobiotics (Malda)

SHORT NOTE (3 MARKS)

a)Cytochrome P450(Malda) (BSMC)(BMC)

b)Phase II reaction of xenobiotics metabolism

c)Phase I xenobiotic reaction

d) Detoxification of alcohol(CNMC)

EXPLAIN WHY (3 MARKS)

a)Cytochrome p450 required for xenobiotics mechanism.

SECTION 15: BIOTECHNOLOGY & NEWER ADVANCES in BIOCHEMISTRY

LONG QUESTION (12 MARKS)

a) Explain the term ' recombinant DNA technology'. Describe the role of the following in r-DNA technology: a. Plasmid / b. Restriction endonuclease / c. DNA ligase. (3+2+4+2)(CNMC)

LONG QUESTION (7 MARKS)

a)Explain the principle of the thin layer chromatography. Mention its application.5+2(NRS)

b)Describe the different modes of Conversion of proto oncogenes into oncogenes.(CNMC)

SHORT NOTE (3 MARKS)

a)RFLP(NBMCH)

b) Monoclonal Antibody(NBMCH)

c) Restriction endonuclease(BMC)

d) Molecular scissors(MMC)

e) Steps of polymerase chain reaction(CMSDH)

EXPLAIN WHY (3 MARKS)

a) PCR technique is much useful in solving medico legal cases.(BMC)

b) DNA fingerprinting is an useful toll in forensic investigations.(MCK)

c) Restriction endonuclease is a molecular scissor.(KPC)

d) Vectors used in r-DNA technology(ESI JOKA)

SECTION 16:MISCELLANEOUS

LONG QUESTION (12 MARKS)

a) Define buffer. Name the important buffer system in the body. Describe the role of lung and kidney in the regulation of blood pH. What is anion gap? (2+2+6+2)(MSDMCH)

b) Define Buffer.Explain the mechanism of buffer action.Name the blood buffers. Describe the renal regulation of acid balance.(2+4+6)(CMSDH)

c)Derive the Handerson Haselbach equation. Explain the application of this equation in understanding of the buffering equation. Draw the titration curve of Lysine.(MCK)

LONG QUESTION (7 MARKS)

a) Mention in brief the therapeutic and Diagnostic role of radioisotopes in medicine. (3+4)(BSMC)

b) Justify the statement that: proto-oncogenes are converted to oncogenes utilizing several genetic mechanism in humans.(CNMC)
c) Describe briefly the different mechanisms for activation of protooncogene to oncogene. 7(MSDMCH)
d) Give a flow diagram of metabolic integration of carbohydrate, lipid and proteins.(MCK)
e) Describe the different processes of detoxification of body.(KPC)
f) Enumerate role of lungs and kidney in regulation of blood PH. Explain the clinical importance of anion gap.5+2(Kalyani)
g) An AMI patient has been admitted to the department of cardiology. Despite of good response to the management, after 4 days of admission he felt sudden chest pain again suggestive of recurrence. Which parameter you will look for immediately? With help of chart mention usual course of the important biomarkers for AMI. Why myoglobin is not preferred as biomarker for the same?2+3+2(Kalyani)
h) What are tumor markers? Name 3 tumour markers and mention their indication and interpretation in clinical laboratory.(2+5)(NRS)
i) Enumerate the plasma proteins, enumerate the functions of any one of them.Draw the serum electrophoresis pattern of plasma protein(agar gel electrophoresis) in normal and in Chronic liver disease. 2+3+2(MMC)
j) Enumerate the important pro and anti –apoptotic genes in the human body.Illustrate the mechanisms by which the intrinsic pathway of apoptosis gets activated.2+5(RGKAR)
k) Plasma proteins involved in the iron homeostasis(RGKAR)

SHORT NOTE (3 MARKS)

a) SCID(NBMCH)
b) Isoenzyme in clinical diagnosis(BMC)
c) Metabolic Alkalosis(BMC)
d) Blood group and antigens.(BSMC)
e) Paroxysmal beta oxidation(BSMC)
f) Epitope and paratope(MSDMCH)
g) Application of radioisotopes in diagnosis(MSDMCH)
h) Antibody diversity(MSDMCH)
i) Uses of radioisotope in medicine.(MCK)
j) principles of chromatography(Malda)
k) Lecithin(KPC)
l) Isozymes(KPC)
m) Electrophoresis(KPC)
n)Renal Function Test(KPC)
o)Radioisotopes
p) Isoelectric precipitation(NRS)
q)Isoenzymes and their clinical importance(IPGMER)
r)Creatinine(IPGMER)
s)Severe combined immunodeficiency syndrome(IPGMER)
t)ELISA(IPGMER)
u)Creatinin clearance(IPGMER)
v) ABO antigen system(CNMC)

w) Tumour suppressor gene(CNMC)
x) Structural Characteristics of immunoglobulin(CNMC)
y) SDS-PAGE(MMC)
z) Role of radioactivity in diagnosis of disease.(MMC)
1) genome of retrovirus(CMSDH)
2) Immunoglobulin G(RGKAR)
3) Renal mechanism in the maintenance of acid base balance(JGMC)
4) High energy compounds.(JGMC)
5)Radio immunoassay(JGMC)
6)Tumor markers(JGMC)

EXPLAIN WHY (3 MARKS)

a) Kidney helps in regulation of blood pH(NBMCH)
b)) Various mechanisms cause activation of proto oncogenes.(NBMCH)
c) . Derive an equation to calculate pH of weak acid or base. Mention the normal pH range of 1.blood 2.urine 3.gastric juice 4.pancreatic juice. (3+4)(BMC)
d) Histamine is the most suitable amino acid buffer.(CNMC)
e) Tamoxifen is helpful in treatment of breast cancer.(CNMC)
f) Lung surfactant prevents Respiratory distress syndrome.(MSDMCH)
g) P53 acts as guardian of human genome.(MSDMCH)
h) Nucleotide analogues are used anticancer agent.(MCK)
i) Premature babies may suffer from Infant respiratory distress syndrome.(MCK)
j) Uncongugated hyperbilirubinaemia in neonates respond to phototheraphy(MCK)
k) Radioisotopes have important diagnostic and therapeutic role.(Malda)
l) Bicarbonate and histidine are important buffers of our body(Malda)
m) P53 is a tumor suppressor gene.(Malda)
n) non-funtional plasma enzyme are important only for clinical purpose.(KPC)
o) Why oxygen is more prone to produce sulfoxide radical?(KPC)
p)) measuring anion gap is important in metabolic acidosis(NRS)
q) Alkaline phosphatase is different isoforms of an enzyme rather isoenzyme(Kalyani)
r) Hyperventillation occurs in a patient with diabetic ketoacidosis.(IPGMER)
s) Histone modification leads to epigenetic changes.(IPGMER)
t) Protein electrophoresis is a useful tool for monoclonal gammopathy.(NRS)
u) There are beneficial roles of free radicals in our body(MMC)
v) Methotrexate prevents the formation of tetrahydrofolate form folic acid.(CMSDH)
x) p53 is often regarded as " guardian of the genome".(RGKAR)
y) Methotrexate is a popular anti-cancer drug(RGKAR)
z) Macrophages play important role in impairing immunity(RGKAR)
1)Isoenzyme of alkaline phosphatise are of diagnostic significance.(JGMC)

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