2406000101010501
EXAMINATION SEPTEMBER 2024
(SUPPLEMENTARY EXAM)
FIRST MBBS
ANATOMY (PAPER - I) (NEW) - LEVEL 1

[Time: As Per Schedule] **[Max. Marks:100]**

Instructions:

1. Fill up strictly the following details on your answer book
   a. Name of the Examination : **FIRST MBBS**
   b. Name of the Subject : **ANATOMY (PAPER-I) (NEW) -LEVEL 1**
   c. Subject Code No : **2406000101010501**
2. Sketch neat and labelled diagram wherever necessary.
3. Figures to the right indicate full marks of the question.
4. All questions are compulsory.
5. Write each section in separate answer sheet.
6. Write to the point.

Seat No:

Student's Signature

Section A

Q.1 Question 1. MCQs **20**

1. Nutrient artery runs:
   a. Towards metaphysis
   b. Away from metaphysis
   c. Away from epiphysis
   d. None

2. Embryonic period of development is:
   a. 1 to 3 weeks
   b. 3 to 12 weeks
   c. 1 to 8 weeks
   d. 3 to 8 weeks

3. Acrosome cap of sperm is derived from:
   a. Golgi body
   b. Mitochondria
   c. Nucleus
   d. Centromere

4. Which of the following is NOT a connective tissue?
   a. Blood
   b. Muscle
   c. Bone
   d. Cartilage

5. Cords of Billroth are present in which part of spleen?
   a. White pulp
   b. Red pulp
   c. Both
   d. Capsules

6. Trachea is lined by:
   a. Stratified squamous epithelium
   b. Ciliated columnar epithelium
   c. Simple columnar epithelium..
   d. Pseudostratified columnar epithelium

7. Smallest dural venous sinus is:
   a. Occipital sinus
   b. Superior sagittal sinus
   c. Cavernous sinus
   d. Superior petrosal sinus

8. Facial colliculus located at:
   a. Pons
   b. Medulla
   c. Mid brain
   d. Interpeduncular fossa

9. The tract that carries pain and temperature sensation is:
   a. Pyramidal tract
   b. Lateral spinothalamic tract
   c. Anterior spinothalamic tract
   d. Spinocerebellar tract

10. Subarachnoid space ends at:
   a. D12
   b. L2
   c. L5
   d. S2

11. Nervus spinosus is a branch of which of the following?
   a. Maxillary nerve
   b. Mandibular nerve
   c. Facial nerve
   d. Nerve of pterygoid canal

12. Common carotid artery divides at the level of:
   a. Hyoid bone
   b. Cricoid cartilage
   c. Superior border of thyroid cartilage
   d. Inferior border of thyroid cartilage

13. Protrusion of tongue NOT possible in damage of:
   a. Styloglossus
   b. Hyoglossus
   c. Palatoglossus
   d. Genioglossus

14. Otic ganglion supplies:
   a. Submandibular gland
   b. Lingual gland
   c. Parotid gland
   d. All three

15. Sinus of Morgagni is between:
   a. Middle constrictor and inferior constrictor
   b. Middle constrictor and superior constrictor
   c. Superior constrictor and skull
   d. None of the above

16. Policeman's tip deformity occurs due to
   a. Erb's palsy
   b. Median nerve palsy
   c. Klumpke's palsy
   d. Ulnar nerve palsy

17. Muscle of arm with additional supinator action:
    a. Brachialis
    b. Biceps brachii
    c. Coracobrachialis
    d. Triceps

18. The weight of the upper limb is transmitted to the axial skeleton by:
    a. Coraco-clavicular ligament
    b. Coraco-acromial ligament
    c. Acromio-clavicular ligament
    d. Coraco-humeral ligament

19. Which muscle does NOT take part in formation of dorsal digital expansion?
    a. Interossei
    b. Lumbricals
    c. Extensor digitorum
    d. Adductor pollicis

20. Contents of anatomical snuff box are all EXCEPT:
    a. Radial artery
    b. Superficial branch of radial nerve
    c. Posterior interosseus nerve
    d. Cephalic vein

Section B

Q.2 Case base question (two out of three) **16**

1. A 32 year old man presents with inability to close his mouth. During history taking, patient told he had trauma during opening his mouth. After clinical and radiological examination, doctor made a diagnosis of dislocation of the temporo-mandibular joint. **(1+2+3+2)**
    a) Write type and subtype of temporo-mandibuar joint.
    b) Name the factors maintaining the stability of this joint.
    c) Name the muscles of mastication, action and nerve supply.
    d) How to reduce the dislocation of temporo-mandibular joint?

2. A 40 year old female by profession computer operator consulted a physician with a complaints of sensation of 'pins and needle' on first 3 ½ fingers of her right hand. By examination physician noticed flattening thenar eminence and also pain was increased while flexing the wrist. **(2+2+2+2)**
    a) What is this condition called? And which structure is affected?
    b) Why patient is having 'pins and needle' over first 3 ½ digits?
    c) Give anatomical basis of flattening of thenar eminence.
    d) Which structure is cut surgically to relieve the symptoms?

3. A 22 year old male patient, was brought to the emergency department for head trauma. Radiological examination revealed fracture of the petrous part of temporal bone. After 2 days of hospital observation, patient developed blurred and double vision. During ophthalmic examination, the doctor noticed a medial squint. Doctor made a diagnosis of medial squint. **(2+2+2+2)**
    a) What is medial squint? Name affected nerve.
    b) Give anatomical basis of medial squint.
    c) Write nerve supply of all extra-ocular muscles.
    d) Draw a labeled diagram showing movements of eyeball.

Q.3 a) Write short note (two out of three) **10**

1. Pectoralis major muscle: origin, insertion, nerve supply, action, applied anatomy
2. Axilary artery: course, relation, branches and applied aspect
3. Inter-muscular spaces of scapular region

b) Write short note on **10**

1. Results of fertilization **OR** Folding of embryo
2. Development of tongue **OR** Cleft palate

c) Write short note (one out of two) **4**

1. Blood supply of long bone
2. Connective tissue cells

Section C

Q.4 Long question (two out of three) **16**

1. Posterior triangle of the neck: boundaries, roof, floor, contents and applied anatomy
2. Nerve supply of soft palate, pharynx and larynx
3. Describe the nasal septum with necessary diagram under the headings of: formation, nerve supply, blood supply and applied

Q.5 a) Write short note (two out of three) **10**

1. Floor of the fourth ventricle with labeled diagram
2. Corpus callosum in detail s
3. Transverse section of midbrain at the level of superior colliculus with applied aspect

b) Write short note on **10**

1. Histology of spleen **OR** Histology of elastic cartilage
2. Histology of cornea **OR** Histology of mixed salivary gland

c) Write short note (one out of three) **4**

1. Neuroglia
2. End artery
3. Gastrulation

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2406000101010502
EXAMINATION SEPTEMBER 2024
(SUPPLEMENTARY EXAM)
FIRST MBBS
ANATOMY (PAPER - II) (NEW) - LEVEL 1

[Time: As Per Schedule] **[Max. Marks: 100]**

Instructions:
1. Fill up strictly the following details on your answer book
   a. Name of the Examination : **FIRST MBBS**
   b. Name of the Subject : **ANATOMY (PAPER - II) (NEW) - LEVEL 1**
   c. Subject Code No : **2406000101010502**
2. Sketch neat and labelled diagram wherever necessary.
3. Figures to the right indicate full marks of the question.
4. All questions are compulsory.
5. Write to the point.

Seat No:

Student's Signature

Section A

Q.1 MCQS **20**

1. The boundaries of Calot's triangle formed by all of the following EXCEPT:
   a. Portal vein
   b. Cystic duct
   c. Visceral surface of liver
   d. Common hepatic duct

2. All the following are muscle of the floor of femoral triangle, which of following muscle has dual nerve supply?
   a. Iliacus
   b. Psoas major
   c. Adductor longus
   d. Pectineus

3. Structures crosses dorsal surface of ischial spine are all, EXCEPT:
   a. Internal pudendal vessels
   b. Pudendal berve
   c. Nerve to obturator internus
   d. Obturator nerve

4. Select the incorrect statement about Meckel's diverticulum:
   a. Located 2 feet proximal to the anorectal junction
   b. Attached to the antimesenteric border
   c. Usually 5 cm long
   d. May cause intestinal obstruction

5. Brunner's gland is prominent feature of histology of _____
   a. Duodenum
   b. Appendix
   c. Ileum
   d. Colon

6. Hypertrophy of following lobe of prostate causes obstruction of internal urethral orifice in old age:
   a. Lateral lobe
   b. Posterior lobe
   c. Median lobe
   d. Middle lobe

7. Stomach bed consists of all except:
   a. Spleen
   b. Splenic artery
   c. Pancreas
   d. Right kidney

8. Vertebral level of esophageal opening in thoraco-abdominal diaphragm is __
   a. T8
   b. T10
   c. T11
   d. T12

9. All are derivatives of mesonephric duct in male EXCEPT
   a. Epididymis
   b. Ductus deferens
   c. Seminal vesicle
   d. Prostate

10. Pepsin is secreted by:
   a. Oxyntic cells
   b. Chief cell
   c. Mucus neck cells
   d. Argentaffin cells

11. Cri-du-chat syndrome is represented as:
   a. 47, XY, +21
   b. 47, XXY
   c. 46, XX, 5p
   d. 45, XO

12. Which of the following is a structural chromosomal aberration?
   a. Deletions
   b. Translocations
   c. Inversions
   d. Recombinations

13. Guy ropes includes all EXCEPT:
   a. Semitendinosus
   b. Semimembranosus
   c. Gracilis
   d. Sartorius

14. Meralgia paresthesia is due to involvement of:
   a. Lateral cutaneous nerve of thigh
   b. Ilio-inguinal nerve
   c. Genitofemoral nerve
   d. Saphenous nerve

15. Following nerve supplies skin of the first interdigital cleft on the dorsum of the foot:
   a. Saphenous nerve
   b. Superficial peroneal nerve
   c. Deep peroneal nerve
   d. Sural nerve

16. Transverse sinus is present posterior to which structure
   a. Rigt atrium
   b. Left atrium
   c. Pulmonary trunk
   d. Superior vena cava

17. All drain into coronary sinus EXCEPT:
a. Middle cardiac vein
b. Small cardiac vein
c. Posterior vein of left ventricle
d. Anterior cardiac vein

18. From above downwards, what is the arrangement of intercostal nerve & vessels in the costal groove?
a. Vein, Artery, Nerve
b. Artery, Vein, Nerve
c. Nerve, Vein, Artery
d. Nerve, Artery, Vein

19. Following structure passes most medially deep to superior extensor retinaculum:
a. Anterior tibial artery
b. Deep peroneal nerve
c. Tibialis anterior
d. Extensor halluces longus

20. All of the following structures form impressions on the mediastinal surface of the left lung except
a. Azygos vein
b. Oesophagus
c. Descending thoracic aorta
d. Arch of aorta

Section B

Q.2 Case base question (two out of three) **16**

1. A 45 year old chronic alcoholic man, visited a general physician with complaints of pain in the abdomen, yellowish discoloration of skin and eyeball and repeated episodes of vomiting of blood since last 2 weeks. Doctor do a palpation of abdomen in deep inspiration and do a diagnosis of liver cirrhosis with hepatomegaly and splenomegaly. **(2+2+2+2)**
   a. Define the terms: hepatomegaly and splenomegaly. Write their common cause.
   b. Write the blood supply of liver.
   c. Enumerate the tributaries of portal vein.
   d. Enlist the sites of porto-caval anastomosis.

2. A 55 year old man went to the hospital with complain of swelling in groin on the right side. After examination, doctor found that swelling was located supero-medial to the pubic tubercle & it was coming out of the superficial inguinal ring. Patient was diagnosed with direct inguinal hernia. **(1+3+2+2)**
   a. What is direct inguinal hernia?
   b. How to differentiate direct from indirect inguinal hernia?
   c. What is superficial inguinal ring? Which structures emerge through it?
   d. Which factors help in maintaining the integrity of the inguinal canal?

3. A 62-years-old man was admitted to casualty ward for sensation of pressure in the chest on the left side. He complained of sweating, shortness of breath and vomiting. The symptoms occurred in the morning when he was drinking his morning tea about an hour ago. After taking the ECG, the doctor

diagnosed the condition as myocardial infarction. Based on this case, answer the following: **(2+2+2+2)**

a. What is myocardial infarction?
b. Where the pain of myocardial infarction radiates and why there?
c. Why did the patient complaint of nausea and vomiting?
d. What is coronary bypass? Which blood vessels are used in this surgery?

Q.3 a) Write short note (two out of three) **10**

1. Medial longitudinal arch with relevant clinical anatomy
2. Ligaments of hip joint and applied anatomy of hip joint
3. Enumerate the palpable arteries of lower limb. Write their point of palpation. Describe course, relation and branches of anyone of them.

b) Write short note on **10**

1. Histology of compact bone **OR** Transitional epithelium
2. Histology of pancreas **OR** Histology of jejunum

c) Write short note (one out of two) **4**

1. Down's syndrome
2. Lyon's hypothesis

Section C

Q.4 Long question (two out of three) **16**

1. Supports of uterus: classification, describe transverse cervical and broad ligament in detail and applied anatomy
2. Ischi-anal fossa: boundaries, contents, recesses and applied aspect
3. Rectus sheath: formation, contents, importance and clinical anatomy

Q.5 a) Write short note (two out of three) **10**

1. Thoracic duct in detail
2. Superior mediastinum
3. Broncho-pulmonary segment: definition, structure, classification and relevant clinical anatomy

b) Write short note on (two out of three) **10**

1. Development of kidney
2. Midgut rotation
3. Development of inter-atrial septum

c) **Write short note (one out of two)** **4**

1. Precautions during handling cadaver
2. Hysterosalpingography

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2406000101020601
EXAMINATION SEPTEMBER 2024
(SUPPLEMENTARY EXAM)
FIRST MBBS
PHYSIOLOGY (PAPER - I) (NEW) - LEVEL 2

[Time: As Per Schedule] **[Max. Marks: 100]**

Instructions:

1. **Fill up strictly the following details on your answer book**
   a. Name of the Examination : **FIRST MBBS**
   b. Name of the Subject : **PHYSIOLOGY (PAPER - I) (NEW) - LEVEL 2**
   c. Subject Code No : **2406000101020601**
2. Sketch neat and labelled diagram wherever necessary.
3. Figures to the right indicate full marks of the question.
4. All questions are compulsory.

Seat No:

Student's Signature

Section A

Q.1 MCQ **20**

1. Which intercellular junctions directly allow the passage of small molecules and ions between the cytosol of one cell and its neighbour without movement into interstitial fluid?
   A. Gap junctions B. Focal adhesions
   C. Zonula occludens D. Desmosomes

2. Which statement about feedback control systems is incorrect?
   A. Most control systems of the body act by negative feedback
   B. Positive feedback usually promotes stability in a system
   C. Generation of nerve action potentials involves positive feedback
   D. Feed-forward control is important in regulating muscle activity

3. An unspecialized stem cell becomes a brain cell during fetal development. This is an example of:
   A. differentiation B. growth
   C. organization D. responsiveness

4. Which cell type migrates into inflammatory sites to clean up necrotic tissue and direct tissue remodelling?
   A. Neutrophil
   B. Macrophage
   C. Dendritic cell
   D. Eosinophil

5. The average half-life of neutrophils in the circulation is:
   A. 6 hours
   B. 5 days
   C. 2 weeks
   D. 1 month

6. Which of the following clotting factors is not vitamin K dependent?
   A. Factor II
   B. Factor V
   C. Factor VII
   D. Factor IX

7. What is the purpose of "intrinsic factor" in gastric juice?
   A. to activate pepsinogen
   B. to assist with the absorption of vitamin B12
   C. to protect the stomach lining against hydrochloric acid
   D. it stimulates the release of gastrin

8. In infants, defecation often follows a meal. The cause of colonic contractions in this situation is:
   A. The gastro-ileal reflex
   B. Increased circulating levels of CCK
   C. The gastro-colic reflex
   D. The enterogastric reflex

9. Which substance does not increase the secretion of HCl in the stomach?
   A. Gastrin
   B. Acetylcholine
   C. Histamine
   D. Norepinephrine

10. Which of the following decreases in length during the contraction of skeletal muscle fiber?
   A. Thin filaments
   B. Thick filaments
   C. A band of the sarcomere
   D. I band of the sarcomere

11. Tetanic contraction of a skeletal muscle fiber results from a cumulative increase in the intracellular contraction of which of the following?
   A. Na+
   B. K+
   C. Ca++
   D. Troponin

12. In a normal electrocardiogram (ECG), P wave is produced by:
    A. Depolarization of atria
    B. Repolarization of atria
    C. Depolarization of ventricles
    D. Repolarization of ventricles

13. Cardiac output does not increase in
    A. Severe Exercise
    B. Pregnancy
    C. Injection of Epinephrine
    D. Sleep

14. The work performed by the left ventricle is substantially greater than that performed by the right ventricle, because in the left ventricle.
    A. After load is greater
    B. Preload is greater
    C. Stroke volume is greater
    D. Contraction is slower

15. The plateau phase of the action potential which develops in ventricular fibres is predominantly due to:
    A. Opening of voltage-gated fast sodium channels
    B. Opening of voltage-gated slow sodium channels
    C. Opening of voltage-gated slow calcium channels
    D. Opening of voltage-gated fast calcium channels

16. In a normal person, most of the glucose that is filtered through the glomerulus undergoesreabsorption in:
    A. Proximal convoluted tubule
    B. Ascending limb of the loop of Henle
    C. Distal convoluted tubule
    D. Collecting duct

17. The urine of a normal person does not have:
    A. Urea
    B. Uric acid
    C. Creatinine
    D. Significant amount of haemoglobin

18. PO2 40 mm Hg and PCO2 46 mm Hg is normally found in:
    A. Systemic venous blood
    B. Systemic arterial blood
    C. Alveolar air
    D. Inspired air

19. Which of the following is responsible for the movement of O_2 from the alveoli into the blood in the pulmonary capillaries?
    A. Active transport
    B. Filtration
    C. Secondary active transport
    D. Passive diffusion

20. Surfactant lining the alveoli
    A. Helps prevent alveolar collapse
    B. Is produced in alveolar type 1 cells and secreted into the alveolus
    C. Is increased in the lungs of heavy smokers
    D. Is a glycolipid complex

Section – B

40 Marks

Q.2 Long Answer Questions **10**

A male patient developed anaphylaxis when a drug was given intravenously for his treatment. Clinical examination revealed low volume pulse, tachycardia, systolic blood pressure (SBP)/Diastolic blood pressure (DBP) = 80/60 mmHg, and tachypnoea.

a. What is the physiological basis of the blood pressure observed in this patient? (3 marks)
b. What is the Pulse Pressure of this patient? What is its significance? (2 marks)
c. What is the Mean blood pressure (MBP) of this patient? What is the significance of MBP? (3 marks)
d. What is the physiological basis of tachycardia and tachypnoea in the given case? (2 marks)

Q.3 Answer in Short (Any 5 out of 6) **(5x3=15)**

a. Diffusion

b. Intrinsic pathway of blood clotting

c. Refractory period

d. Surfactant.

e. Cardiac output.

f. Factors affecting doctor-patient relationship

Q.4 Short notes (Any 3 out of 4) **(3x5=15)**

a. Action potential

b. Erythropoiesis

c. Neural regulation of respiration

d. Functions of Liver

Section – C

40 Marks

Q.5 Long Answer Question **(1x10=10)**

Describe the Process of excitation -contraction coupling and explain the Walk-Along theory of Muscle contraction (4 +6 =10 marks)

Q.6 Answer in Short (Any 5 out of 6) **(5x3=15)**

a) Sodium-Potassium pump.

b) Albumin.

c) Secretin.

d) Mention stages of urine formation.

e) Causes of Atrio-ventricular Nodal Delay.

f) Endoplasmic reticulum.

Q.7 Short notes (Any 3 out of 4) **(3x5=15)**

a) Humoral Immunity

b) Functions of Bile.

c) Hypoxia.

d) Baroreceptors.

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2406000101020602
EXAMINATION OCTOBER 2024 (SUPPLEMENTARY EXAM)
FIRST MBBS
PHYSIOLOGY (PAPER - II) (NEW) - LEVEL 2

[Time: As Per Schedule] **[Max. Marks: 100]**

Instructions:
1. **Fill up strictly the following details on your answer book**
   a. Name of the Examination: **FIRST MBBS**
   b. Name of the Subject: **PHYSIOLOGY (PAPER - II) (NEW) - LEVEL 2**
   c. Subject Code No: **2406000101020602**
2. Sketch neat and labelled diagram wherever necessary.
3. Figures to the right indicate full marks of the question.
4. All questions are compulsory.

Seat No:

Student's Signature

Section A

Q.1 MCQ: **20**

1. Muller's doctrine of specific nerve energies is otherwise known as:
   A. Bell-Magendie law
   B. Label led line principle
   C. Weber-Fechner law
   D. Law of projection

2. A single sensory axon and all of its peripheral branches constitute a:
   A. Receptive field
   B. Sensory unit
   C. Dermatome
   D. Sensory nerve

3. The muscle spindle remains capable of responding to stretch even when the muscle is contracting. This is because of:
   A. Presence of stretch receptors in the tendon
   B. Co-activation no $f\alpha\&y$ −motor neurons
   C. Reciprocal innervation
   D. Autogenic inhibition

4. Joint position sense is transmitted by:
   A. Anterior spinothalamic tract
   B. Lateral spinothalamic tract
   C. Dorsal column medial lemniscal system
   D. Anterior Corticospinal tract

5. In which sensory system does excitation of the sensory receptor by an adequate stimulus result in hyperpolarization of receptor cells?

A. Visual pathway
B. Auditory pathway
C. Taste pathway
D. Olfactory pathway

6. Impedance matching is a function of:
A. Scala media
B. Endolymph
C. Ear ossicles and tympanic membrane
D. Cochlear nucleus

7. Human chorionic gonadotropin is structurally and function ally similar to:
A. LH
B. FSH
C. Growth hormone
D. Inhibin

8. Which of the following hormones is not diabetogenic?
A. Epinephrine
B. Cortisol
C. Growth hormone
D. Glucagon

9. The release of androgens from the adrenal cortex is stimulated mainly by
A. LH
B. FSH
C. ACTH
D. GnRH

10. In Humans, the hormone that is mainly secreted by adrenal medulla is:
A. Epinephrine
B. Norepinephrine
C. Dopamine
D. Adrenomedullin

Q.2

11. The term neuro-hormone' is applied to:
A. Oxytocin and Vasopressin
B.NO&CO
C. Glycine & Glutamate
D.FSH&LH

12.Which of the following hormones does not act through Gprote in coupled receptor mechanism?
A. Epinephrine
B. Angiotensin-II
C.ACTH
D. Thyroxine

13. Somatostatin inhibits the secretion of:
A. Insulin
B. Glucagon
C. Growth hormone
D. Gastrin

Q.3

14. Iodine is concentrate din thyroid follicular epithelial cells by:
A. Primary active transport
B. Secondary active transport
C. Simple diffusion
D. Facilitated diffusion

15. Hypothalamus does not play a prominent role in the regulation of:
A. Food & water intake
B. Temperature
C. Respiration
D. Circadian rhythm

Q.4

16. Which of the following is heat conserving mechanism?
A. Panting
B. Sweating
C. Curling up in a ball
D. Insensible water loss

17. Most of the ATP generated in the nerve cells is utilized to energize the ___
A. Na+-Ca++exchanger
B. H + ATPase
C. Na+-K + ATPase
D. Protein synthesis

18. The number of sodium channels per square micrometre of membrane in myelinated mammalian neurons is maximum in the:
A. Cell body
B. Dendritic zone
C. Initial segment
D. Node of Ranvier

19. Which of the following statements about electrotonic potentials is incorrect?
A. They are graded responses
B. They are local non propagated responses
C. Maybe depolarizing or hyperpolarizing
D. They are produced by a threshold stimulus.

20. Which of the following cells undergo meiotic division?
A. Primordial germ cells
B. Primary spermatocytes
C. Secondary spermatocytes
D. Secondary oocyte

Section B **40**

Q.2 Long Answer Questions **10**

A middle-aged person working as an executive in a company, complains of increased tiredness and pain in both the lower limbs, along with decrease in body weight, increase in urinary frequency and hunger since last six months.

a. What is the probable condition? (2 marks)
b. What blood parameters are likely to be deranged? (2 marks)
c. What is the patho-physiology for the above condition? (3 marks)
d. What are the Life Style Modifications required along with the drug therapy to treat this condition? (3 marks)

Q.3 Answer in Short (Any 5 out of 6) **15**

a. Shivering thermogenesis.
b. Actions of Vitamin D.
c. Natural contraceptive methods.
d. Wernicke's area
e. Attenuation reflex.
f. Milk let-down reflex.

Q.4 Short notes (Any 3 out of 4) **15**

a. Muscle spindle
b. Functions of hypothalamus.
c. Male puberty.

d. Auditory pathway.

Section C

40

Q.5 Long Answer Question **10**

Enlist the hormones secreted from the pituitary gland and describe the functions of the Growth hormone. Explain the basis of acromegaly, gigantism, and dwarfism.
(2+5+3=10 marks)

Q.6 Answer in Short (Any 5 out of 6) **15**

a) Indicators of ovulation
b) Regulation of thyroid hormone secretion
c) Conductive deafness
d) Referred pain
e) Inverse stretch reflex
f) Properties of synapse

Q.7 Short notes (Any 3 out of 4) **15**

a) Spermatogenesis
b) Photo transduction
c) Cutaneous receptors
d) Flight and fight response

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2406000101030701-A
EXAMINATION OCTOBER 2024 (Supplementary Exam)
FIRST MBBS
BIO-CHEMISTRY (PAPER - I) (NEW) - LEVEL 3

[Time: As Per Schedule] **[Max. Marks: 100]**

Instructions:
1. **Fill up strictly the following details on your answer book**
   a. Name of the Examination: **BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (FIRST)**
   b. Name of the Subject: **BIO-CHEMISTRY (PAPER - I) –Level-3**
   c. Subject Code No: **2406000101030701-A**
2. Sketch neat and labelled diagram wherever necessary.
3. Figures to the right indicate full marks of the question.
4. All questions are compulsory.

Seat No:

Student's Signature

SECTION-A

Q.1 Multiple choice questions (20 out of 20) **20**

1. Which of the following enzymes, does not play a role by eliminating the free radicals from the biological sssystem?
   a) Synthase b) Superoxide dismutase
   c) Catalase d) Glutathione peroxidase

2. The oxidation of NADH & $FADH_2$ Through ETC yields about
   a) 2.5 and 1.5 ATP respectively b) 3 and 2 ATP respectively
   c) 1.5 and 2.5 ATP respectively d) 2 and 3 ATP respectively

3. Which one of the following molecules acts as a methyl donor in detoxification by Conjugation
   a) SAM b) GSH
   c) PAPS d) All the above

4. End product of glycolysis in aerobic and anaerobic respectively
   a) Pyruvate, Lactate
   b) Lactate, Pyruvate
   c) Fumarate, Ketoglutarate
   d) Ketoglutarate, Fumarate

5. Von-gieake Disease is due to which enzyme defied
   a) Glycogen Synthase
   b) Transketolase
   c) Pyruvate kinase
   d) Glucose-6-phosphatase

6. The number of cycles required to synthesize palmitate is
   a) 5
   b) 6
   c) 7
   d) 9

7. Which of the following enzymes were used as markers of Hepatocellular injury
   a) ALP & GGT
   b) ALT & AST
   c) LDH & CPK
   d) None of above

8. Which of the following is not the disease associated with the abnormalities of membrane proteins?
   a) Wilson disease
   b) Familial hypercholesterolemia
   c) Diabetes mellitus
   d) Cystic fibrosis

9. Which of the following is not an example of factors promoting Calcium absorption?
   a) Vitamin D
   b) Oxalates
   c) Parathyroid Hormone
   d) Lactose

10. Which of the following vitamins does not play a beneficial role in protecting the biological membranes from lipid peroxidation.
    a) Vitamin E
    b) Vitamin C
    c) Vitamin-B12
    d) Vitamin A

11. Proteins take part in ETC & Oxidative Phosphorylation are coded by _____
    a) Nuclear DNA
    b) Mitochndrial DNA
    c) RNA
    d) A & B Both

12. Which of the following substance cannot pass through the normal glomerular membrane?
    a) Creatinine
    b) Albumin
    c) Myoglobin
    d) Uric acid

13. Which of the following metabolic pathway is amphibolic in nature?
    a) Glycolysis
    b) Glycogenolysis
    c) De-novo synthesis
    d) TCA cycle

14. Following is the major organ involve in metabolism of Xenobiotics
    a) Brain
    b) Liver
    c) Muscles
    d) Kidney

15. Key enzymes of gluconeogenesis except all are
    a) Pyruvate carboxylase
    b) PEP-CK
    c) Fructose 1-6-bisphosphatase
    d) Transketolase

16. Bronze diabetes is associated with
    a) Wilson's disease
    b) Hemosiderosis
    c) Hemochromatosis
    d) Iron deficiency anemia

17. The following is used in measuring GFR
    a) Cellulose
    b) Inulin
    c) Starch
    d) Glycogen

18. Most of glycogen stores are present in
    a) Liver
    b) Skeletal Muscle
    c) Brain
    d) Adipose Tissue

19. Molecule that acts as a local Hormone
    a) Phospholipids
    b) Cholesterol
    c) Prostaglandins
    d) Acetylcholine

20. Dipalmitoyl lecithin acts as:
    a) Platelet activating factor
    b) Second messenger for hormones
    c) Lung surfactant
    d) Anti-ketogenic compound

SECTION-B

Q.2 Long Answer Questions (2 out of 3) **20**

1. Enumerate the beta-oxidation of palmitic acid with energetics. Describe the regulation of beta oxidation.(2+5+3=10 marks)

2. Describe the sources, daily requirement, biological functions and disorders of iron metabolism. Describe the absorption of iron with enhancing and hindering factors.(1+2+2+2+3=10 marks)
3. Describe the synthesis and breakdown of glycogen. Describe its regulation and add a note on glycogen storage disorders.(4+2+4=10marks)

Q.3 Short Answer Questions (10 out of 11) **20**

1. Give any four examples of phase 1 detoxification reactions.
2. Why is sample for blood glucose collected in fluoride bulb?
3. Why is hypocalcemia seen in Vit D deficiency?
4. Why mitochondria are called powerhouses of the cell?
5. Difference between primary and secondary hypothyroidism on lab testing.
6. Biological role of prostacyclins and thromboxane.
7. How do statins help in lowering cholesterol levels?
8. Name essential fatty acids and describe deficiency symptoms.
9. Significance of HMP shunt.
10. Products formed from cholesterol in the body.
11. Factors causing methaemoglobinemia and its treatment.

SECTION-C

Q.4 Short Answer Questions (4 out of 5) **20**

1. Inhibitors of electron transport chain.
2. Write the role of doctor in healthcare system.
3. Describe transport across cell membrane.
4. Renal function tests.
5. Amphibolic role of TCA Cycle

Q.5 Clinical Cases (2 out of 2) **20**

Case-1:

A 4-year child was brought to pediatric OPD with edema over legs and face. She also had discoloration of hair, skin and retarded growth, on enquiring by doctor, mother told to the doctor that child was on breast milk only for one and half year of the age and for the last two years she was being given rice. The child was admitted in pediatric ward and diagnosed as Protein Energy Malnutrition (PEM).

The laboratory data of child showed hypoalbuminemia and abdominal sonography showed enlarged liver (fatty liver).

1. What are the different types of Protein Energy Malnutrition (PEM)? What is the type of PEM in this case?
2. What are the clinical features of different type of PEM?
3. What is the cause of edema in this case?
4. What dietary advice will you suggest for this patient?
5. Why there is fatty liver in PEM?

Case-2:

A 54-year-old obese person presented in emergency with altered consciousness level and shortness of breath for last 4 hours. He is having history of uncontrolled diabetes mellitus for 15 years, as he was not following any medical advice from physician. Patient's relative told that was also having complained of fever, nausea & vomiting. On examination physician noted dryness of mouth, pale & dry conjunctive, sunken eye ball, feeble pulse, tachypnoea, tachycardia, very low blood pressure (70/40 mm Hg).

Lab investigations:

Random Blood glucose: 480 mg/dl (70-140 mg/dl)
Blood pH: 7.20 (7.35 – 7.45)
Serum creatinine: 2.5 mg/dl (0.4-1.4 mg/dl)
Urine glucose: Positive (++++),
Serum Na+ 120mmol/L (135-145 mmol/L)
Urine Ketones: Positive
Serum K+: 6.0 mmol/l (3.5-5.0 mmol/L)

The patient was diagnosed as a case of Diabetic ketoacidosis with acute renal failure.

Questions:

1. Write biochemical basis for shortness of breath and dehydration in this patient.
2. Ketogenesis occurs only in liver but hepatocytes cannot utilize ketone bodies. Justify.
3. Write four causes for positive benedict test in urine other than reducing sugar.
4. Which other investigation are required for evaluation of renal function & to differentiate acute & chronic renal failure?
5. Why serum K+ levels have to be monitored while giving the treatment to this patient?

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2406000101030702-A
EXAMINATION OCTOBER 2024 (Supplementary Exam)
FIRST MBBS
BIO-CHEMISTRY (PAPER - II) (NEW) - LEVEL 3

[Time: As Per Schedule] **[Max. Marks:100]**

Instructions:

1. **Fill up strictly the following details on your answer book**
   a. Name of the Examination : **BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (FIRST)**
   b. Name of the Subject : **BIO-CHEMISTRY (PAPER - II) (Level-3)**
   c. Subject Code No : **2406000101030702-A**
2. Sketch neat and labelled diagram wherever necessary.
3. Figures to the right indicate full marks of the question.
4. All questions are compulsory.

Seat No:

Student's Signature

Section –A

Q.1 Multiple choice questions (20 out of 20) **20**

1. Which of the following trace element has an antioxidant role?
   a. Selenium b. Nickle c. Chromium d. Zinc

2. Urine of a 12 years old boy gave a positive cyanide-nitroprusside test. He had renal stones. He is likely to have:
   a. Homocystinuria b. Cystinosis
   c. Hartnup's disease d. Renal glycosuria

3. Biotin is inhibited by:
   a. Isoniazid (INH) b. Methotrexate c. Dicoumarol d. Avidin

4. Ammonia is trapped in brain by:
   a. Glutamine synthetase reaction b. Glutaminase reaction
   c. Urea synthesis cycle d. Glutamate dehydrogenase reaction

5. Wernicke's disease & Beri Beri can be treated by administering:
   a) Thiamine b) Niacin c) Folic Acid d) Riboflavin

6. Minamata disease is caused by:
   a) Lead Poisoning b) Mercury Poisoning
   c) Aluminum Toxicity d) Arsenic Toxicity

7. Immunoglobulin present in secretions is:
   a) IgA b) IgM c) IgE d) IgG

8. Reversal of A/G ratio is seen in:
   a) Cirrhosis of liver b) Nephrotic Syndrome
   c) Dehydration d) Both A & B

9. The two nitrogen atoms of urea are
   a) Aspartate and glutamate b) Aspartate and ammonia
   c) Fumarate and aspartate d) Ammonia and glutamate

10. Which of the following nucleotide acts as second messanger in eliciting the hormonal action
   a) NAD+ b) B SAM c) ADP d) CAMP

11. Ammonia from brain is detoxified Gamma cysteinyl glycine is other
   a) Bradykinin b) Angiotensin c) Glutathione d) Oxytocin

12. The photosensitivity is not a feature of which of the following porphyria
   a) Congenital erythropoetic porphyria
   b) Porphyria cutenia tarda
   c) Acute intermittent porphyria
   d)Varigate porphyria

13. Which of the following enzyme is associated with the salvage pathway of purine nucleotide
   a) Ribonucleoside reductase b) Cyclohydrolase
   c) PRPP synthase d) HGPRT

14. Which of the following trace element has an antioxidant role?
   a. Selenium b. Nickle c. Chromium d. Zinc

15. The chief product of catabolism of purine in human being is
   a. Urea. b. Urica acid
   c. Hypoxanthine d. Beta aminoisobutyric

16. The drug of choice for primary gout is:
   a. Allopurinol b. Aspirin
   c. Colchicine d. Probenecid

17. Which protein is not present in plasma?
   a.Albumin. b. Fibrinogen
   c. Hemoglobin. d. Globulins

18. Genu valgum and Genu varus are characteristic feature of,
   a. Vitamin A deficiency b. Vitamin K deficiency
   c. Niacin deficiency d. Vitamin D deficiency

19. Triangular plaque or Bitot's spot is commonly seen in-
a. Retinol deficiency
b. Retinol toxicity
c. Diabetic retinopathy
d. Conjunctivitis

20. Amino acid used for the synthesis of serotonin hormone is -
a. Tyrosine b. Tryptophan c. Histidine d. Proline

Section –B

Q.2 Long Answer Questions (2 out of 3) **40**
2x10=20

1. Explain eukaryotic DNA organization. Add a note on eukaryotic cell cycle. Describe the role of various eukaryotic DNA polymerases. Describe DNA repair mechanisms with disorders. (3+2+2+3).

2. Draw oxygen dissociation curve and explain right & left shift of ODC with factors affecting it. Describe molecular defect, reason for sickle-shaped RBCs, clinical features, diagnosis and management of sickle cell disease

3. Describe the complete degradation of Heme. Describe various types of Jaundice, causes, clinical features and the biochemical parameters used for their diagnosis.

Q.3 Short Answer Questions (10 out of 11) **10x2=20**

1) Draw well labeled diagram of induction and repression of Lac-operon
2) Why does albumin level decrease in cirrhosis of the liver and nephrotic syndrome?
3) Write deficiency disorders of any four water-soluble vitamins with at least three clinical features each.
4) Define Isoenzymes. Give clinical significance of isoenzymes of LDH
5) What are tumor markers? Give 2 examples
6) Glutathione is important for maintaining RBCs membrane integrity
7) Sickle Hb tends to polymerize in deoxygenated state.
8) Genetic code is universal with few exceptions.
9) Discuss role of acute phase proteins in health and disease.
10) Effect of pH, pCO_2, 2-3-BPG & temperature on ODC curve.
11) Telomerase are involved in aging process. Justify

Section C

Q.4 Short Answer Questions (4 out of 5) **4x5=20**

1) Describe competitive, non-competitive, and uncompetitive enzyme inhibition with clinical significance. (2+1.5+1.5)
2) Describe steps and clinical applications of DNA recombinant technology (3+2)
3) Describe post-translational modifications with examples
4) Enumerate cardiac biomarkers in the order of their earliest rise in myocardial infarction. Describe cardiac biomarkers that are not enzymes

5) write note on Genetic code

Q.5 **Clinical Cases (2 out of 2)** **2x10=20**

Case-1

A 5-year-old vegetarian boy was brought to pediatric OPD by his mother with the complains of unable to see at night, growth retardation and irritability. On examination his weight is less than his chronological age. There are greyish white spots on lateral sides of both corneas. The patient was diagnosed having Vitamin A deficiency.

Questions:

Q-1 Name the ocular signs and symptoms of vitamin A deficiency according to sequence of their appearance.

Q-2 Draw Wald's visual cycle.

Q-3 Why obstructive jaundice patients may develop night blindness?

Q-4 Write functions & mechanism of action of retinoic acid.

Q-5 Write dietary advice to this patient to correct vitamin A deficiency.

Case-2

A 70 years old man presented with back pain, loss of weight and breathlessness. On examination, he was anemic. Investigations showed: Hb 8gm/dl, total proteins 10.5 gm/dl, albumin 2.5 gm/dl, urea 50 mg/dl, and creatinine 2.3mg/dl. Serum protein electrophoresis showed M band in γ region. In urine, Bence Jones proteins were present. Radiological examination showed punched out lytic lesions in lumbar vertebrae, ribs & pelvis. Diagnosis of Multiple Myeloma was made.

1. What is the principle of electrophoresis?
2. What is the normal pattern of serum proteins in electrophoresis?
3. Calculate A/G ratio in this patient. Name various other conditions which alter A/G ratio.
4. What are Bence Jones proteins? How are they detected in urine?
5. Enumerate the functions of immunoglobulin.

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