



RAN - 2006000101010001 - S

RAN-2006000101010001-S**1st MBBS Examination January - 2024****Anatomy (Human) : Paper - I****Set - 1 (New CBME)****Time: 3 Hours]****[Total Marks: 100****સૂચના : / Instructions**

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.

Fill up strictly the details of signs on your answer book

Name of the Examination:

1st MBBS

Name of the Subject :

Anatomy (Human) : Paper - I - Set - 1 (New CBME)

Subject Code No.: 2006000101010001-S

Seat No.:

--	--	--	--	--	--

Student's Signature

- (2) Write each section in separate answer sheet.
- (3) Draw neat and labelled diagrams wherever necessary.
- (4) Figure to the right indicates maximum marks.
- (5) In section - A, all MCQs are compulsory; only one answer will be accepted, no Negative marking & answers will be marked with blue/black pen on OMR sheet & must be submitted within 30 minutes.

Section - A : MCQ**(20 marks)**

1. Which of the following can extend, adduct & medially rotate the arm-?

A. Teres minor	B. Subscapularis
C. Latissimus dorsi	D. Deltoid
2. Subacromial bursa separates coracoacromial arch from the tendon of-

A. Subscapularis	B. Teres minor
C. Infraspinatus	D. Supraspinatus
3. Epitrochlear lymph nodes are located along which vessel –

A. Median cubital vein
B. Cephalic vein above elbow
C. Cephalic vein in the roof of cubital fossa
D. Basilic vein above elbow

4. Ligaments of Cooper are modifications of –
 - A. Fibrous stroma of breast
 - B. Axillary fascia
 - C. Fatty tissue of breast
 - D. Pectoral fascia
5. Froment's test is performed to assess the integrity of –
 - A. 1st Lumbrical
 - B. Adductor pollicis
 - C. 1st Dorsal interosseus
 - D. 2nd Palmar interosseus
6. Piriform fossa is located in –
 - A. Oropharynx
 - B. Nasopharynx
 - C. Laryngopharynx
 - D. Laryngeal inlet
7. Lacrimation is affected due to damage to which of the following nerve –
 - A. Nasocilliary nerve
 - B. Anterior ethmoidal nerve
 - C. Trigeminal nerve
 - D. Greater petrosal nerve
8. The skin area over the angle of mandible is supplied by –
 - A. Zygomaticotemporal nerve
 - B. Auriculotemporal nerve
 - C. Greater auricular nerve
 - D. Lesser occipital nerve
9. The site of choice for cisternal puncture in infants is –
 - A. Lumbar
 - B. Interpeduncular
 - C. Cerebellomedullary
 - D. Pontine
10. A 20 years old swimmer with otitis media presents with loss of taste sensation. Which nerve is likely to be affected –?
 - A. Vagus
 - B. Glossopharyngeal
 - C. Lingual
 - D. Chorda tympani
11. Spinothalamic tracts terminate on the following thalamic nucleus –
 - A. VPL
 - B. Pulvinar
 - C. Ventral lateral
 - D. VPM
12. Following cells are derived from neural crest **except** –
 - A. Dorsal root ganglion
 - B. Sympathetic neuron
 - C. Dorsal nucleus of vagus
 - D. Parasympathetic neuron
13. Paracentral lobule is supplied by-
 - A. Middle cerebral artery
 - B. Anterior cerebral artery
 - C. Posterior cerebral artery
 - D. Both anterior & middle cerebral artery

14. The nucleus of origin of the facial nerve includes all of the following **except** –
- A. Inferior salivatory nucleus B. Superior salivatory nucleus
C. Nuclei of solitary tract D. Motor nucleus
15. Following combination is correct –
- A. Stereocilia - Intestine B. Microvilli - Epididymis
C. Cilia - Appendix D. Flagella - Spermatozoa
16. Which of the following is the feature of spongy bone –?
- A. Osteon or Haversian system B. Canaliculi
C. Volkmann's canal D. Interstitial lamellae
17. Para-follicular cells or C cells of thyroid gland develop from –
- A. 1st Pharyngeal pouch B. 2nd Pharyngeal pouch
C. 3rd Pharyngeal pouch D. Caudal pharyngeal complex
18. Placenta develops from –
- A. Decidua capsularis & chorion B. Decidua capsularis & amnion
C. Decidua basalis & chorion D. Decidua parietalis & trophoblast
19. All are the example of membranous bones **except** –
- A. Parietal B. Mandible
C. Clavicle D. Scapula
20. Identify the wrong statement about spurt muscles –
- A. Arises at a distance from site of action
B. It is a prime mover
C. Swing component is more powerful
D. It is inserted away from the joint on which it acts

Section - B

Q. 2. Case base question. (2 out of 3)

16 Marks

- A. 4-year-old child swallowed a shirt button. Since the child began to suffocate she was taken to the hospital, where on X-ray examination impaction of foreign body in the larynx was confirmed. (2 + 2 + 2 + 3)
1. Name the parts of laryngeal cavity, which is the narrowest part of laryngeal cavity?
 2. Write down the sensory & motor nerve supply of the larynx.
 3. What happened if recurrent laryngeal nerve gets injured, unilaterally & bilaterally?
 4. Enumerate the cartilages of the larynx and describe the leaf-shaped cartilage.

B. A 35-year-old male involved in domestic fight. During the fight he got a deep cut in the middle of the back of his left arm. There was profuse bleeding from the wound. He immediately rushed to the hospital.

(1 + 2 + 2 + 3)

1. Which nerve and artery at this site is danger of injury?
2. What is the origin and termination of the involved artery?
3. The Involved nerve arises from where & which other nerve arise from the same part?
4. Describe in detail the condition if the concerned nerve damage at the site.

C. A 35 years male complained of tinnitus & vertigo, deafness, decreased lacrimation in the left eye, & asymmetry of face with deviation of angle of mouth to the right side. Loss of sensations of pain & temperature on left side of the face MRI examination revealed tumor in the cerebellopontine angle. (1 + 4 + 3)

1. On which side would the tumor be?
2. Explain the anatomical basis of all the symptoms mentioned above.
3. Explain the difference between supranuclear & infranuclear palsy of facial nerve.

Q. 3. A. Write short note on any 2 out of three.

10 Marks

- a. Lymphatic drainage of breast & applied aspect.
- b. Venous drainage of upper limb & applied aspect
- c. Enumerate the deep fascia of the palm. Describe palmar aponeurosis with applied aspect

B. Write short note on.

10 Marks

- I. Blastocyst or Primitive streak – its fate, function & clinical correlation.
- II. Development of pituitary gland with its clinical correlation or Development of external ear with tympanic membrane

C. Write short note on any one out of two.

4 marks

- i. Ossification
- ii. Classification of muscle according to their movements

Section - C

Q. 4. Write a note on any 2 out of 3. 16 marks

- i. Describe extrinsic muscles of the tongue – their origin, insertion, action, embryological basis of the nerve supply of tongue. If right sided hypoglossal nerve gets paralysed, which side tongue deviate & why.
- ii. Lacrimal apparatus with its components. Write a note on secretomotor innervations of lacrimal gland.
- iii. Describe investing layer of deep fascia of neck in details with its applied aspect.

Q. 5. A. Write a short note. (2 out of 3) 10 Marks

1. Define spina bifida. Describe causes, types and clinical features of spina bifida.
2. Describe basal ganglion under following headings –
 - (a) Parts
 - (b) Functions
 - (c) Connections
 - (d) Applied anatomy
3. Visual pathway with its applied aspect.

B. Write short Note. 10 Marks

1. Histology of stratified squamous epithelium or Histology of Sympathetic ganglion.
2. Histology of cerebrum or Histology of Retina

C. Short note. (any one) 4 Marks

1. Classification of synovial joints & their movements.
2. Compare the microscopic features of a medium sized artery & medium sized vein.
3. Umbilical cord & its anomalies.



RAN - 2006000101010002 - S

RAN-2006000101010002-S**Ist MBBS Examination January - 2024****Anatomy : Paper - II****Human Anatomy : Set - 2 (New CBME)****Time: 3 Hours]****[Total Marks: 100****સૂચના : / Instructions**

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.

Fill up strictly the details of signs on your answer book

Name of the Examination:

Ist MBBS

Name of the Subject :

Anatomy : Paper - II - Human Anatomy : Set - 2 (New CBME)

Subject Code No.: 2006000101010002-S

Seat No.:

--	--	--	--	--	--

Student's Signature

- (2) Write each section in separate answer sheet.
- (3) Draw neat and labelled diagrams wherever necessary.
- (4) Figure to the right indicates maximum marks.
- (5) In section - A, all MCQs are compulsory; only one answer will be accepted, no Negative marking & answers will be marked with blue/black pen on OMR sheet & must be submitted within 30 minutes.

Section - A : MCQ**(20 marks)**

1. When a segment of DNA is transferred from one non-homologous chromosome to another, it is called –
 - A. Deletion of a segment of DNA
 - B. Duplication of a segment of DNA
 - C. Translocation of a segment of DNA
 - D. Inversion of a segment of DNA
2. All of the following are non-invasive techniques **except** –

A. Ultrasonography	B. Foetal echocardiogram
C. CT/MRI	D. Cordocentesis
3. Embryologically genital swellings in the male give rise to –

A. Penis	B. Scrotal sac
C. Penile urethra	D. Prostate

4. Limb muscles develop from –
 - A. Paraxial mesoderm
 - B. Lateral plate mesoderm
 - C. Splanchnic mesoderm
 - D. Neural crest cells
5. Which is correct regarding microscopic features of kidney –
 - A. Renal columns are extensions of renal pyramids into the cortex
 - B. Collecting ducts pass through renal papillae & open into minor calyces
 - C. Medullary rays are part of cortex between the medullary pyramids
 - D. The Bowman's capsule is lined by simple columnar epithelium
6. While observing the histology slide of lung, a student identifies Clara cells, which of the following airways was observed by the student –
 - A. Alveoli
 - B. Bronchiole
 - C. Alveolar duct
 - D. Alveolar sac
7. Locking of the knee joint is caused by the contraction of -
 - A. Popliteus
 - B. Biceps femoris
 - C. Semimembranosus
 - D. Quadriceps femoris
8. All structures enter the gluteal region through greater sciatic foramen **except**-
 - A. Sciatic nerve
 - B. Pudendal nerve
 - C. Tendon of obturator internus
 - D. Internal pudendal artery
9. Arterial pulses can be felt in the lower limb at all of die sites **except** –
 - A. At midinguinal point
 - B. In the popliteal fossa
 - C. On the dorsum of the foot
 - D. In the sole of the foot
10. All the statements are correct about calcaneum **except** –
 - A. It is largest tarsal bone
 - B. It starts ossifying after birth
 - C. Anteriorly it articulates with cuboid bone
 - D. It provides attachment to tendoachillis
11. All forms cruciate anastomosis on the back of the thigh **except** –
 - A. Transverse branch of medial circumference femoral artery
 - B. Ascending branch of first perforating artery
 - C. Ascending branch of the inferior gluteal artery
 - D. Transverse branch of the lateral circumflex femoral artery

12. Lingula is a tongue shaped projection from –
 - A. Upper lobe of left lung
 - B. Upper lobe of right lung
 - C. Lower lobe of right lung
 - D. Lower lobe of left lung
13. The right margin of cardiac shadow in a radiograph is formed by -
 - A. Arch of aorta
 - B. Pulmonary trunk
 - C. Right ventricle
 - D. Right atrium
14. Phrenic nerve supplies all **except** -
 - A. Parietal layer of pericardium
 - B. Fibrous pericardium
 - C. Pulmonary pleura
 - D. Mediastinal pleura
15. Which of the following is not related to superior surface of first rib-?
 - A. Ventral root of T1
 - B. Lower trunk of brachial plexus
 - C. Subclavian artery
 - D. Subclavian vein
16. All structures emerge through the sacral hiatus **except** –
 - A. Fifth sacral nerve
 - B. Coccygeal nerves
 - C. Filum terminate
 - D. Spinal meninges
17. Epiploic foramen of Winslow is bounded by all **except** –
 - A. Caudate lobe of liver superiorly
 - B. First part of duodenum inferiorly
 - C. Portal vein posteriorly
 - D. Right free margin of lesser omentum anteriorly
18. All statements are correct about parietal peritoneum **except** –
 - A. It forms the innermost layer of abdominal wall
 - B. It is composed of mesothelial serous membrane
 - C. It is insensitive to pain
 - D. It develops from somatopleuric mesoderm
19. All are correct about gastric canal **except** –
 - A. It is located along the lesser curvature of the stomach
 - B. It is also called Magenstrasse
 - C. It is produced due to the absence of longitudinal fold of gastric mucosa
 - D. It is prone to ulceration

20. Which of the following statement is false about pelvic outlet—?
- It is bounded anteriorly by lower margin of pubic symphysis
 - It is bounded posterolaterally by sacrotuberous ligaments
 - It is bounded anterolaterally by the conjoint ischiopubic rami
 - Its transverse diameter is maximum

Section - B

Q. 2. Case base question. (2 out of 3)

16 Marks

- A. A mother took her 6 years old son to a pediatrician & complained that her child complains of excessive fatigue upon exertion. After examination & complete investigations, the Doctor detected a septum defect in the heart of the child & told his mother that your son is suffering from a defect in the heart that is a very common birth defect of heart in children. Answer the following question. (1 + 4 + 3)
- What is the most common congenital septum defect of the heart?
 - Write the development of the mentioned defective septum of the heart.
 - Give the embryological basis of the said defect.
- B. X-Ray of a 46 year old female after a road traffic accident revealed posterior dislocation of femur. Her hamstrings & all muscles of the leg & foot were paralyzed. She had foot drop & sensory loss over the posterolateral aspect of leg & dorsum of the foot except medial border. (1 + 1 + 3 + 2 + 1)
- Which nerve is injured?
 - Write down the origin, root value of the injured nerve.
 - What is foot drop & give the anatomical reason to had foot drop.
 - Give the reason of sensory loss over the posterolateral aspect of leg & dorsum of the foot.
 - Give the reason why sensations not lost at medial border of the foot
- C. A 65 years old man with a history of chronic cough noticed a gradually increasing swelling in the left inguinal region. After physical examination the surgeon noted a lemon sized swelling above the pubic tubercle. The swelling increased in size on coughing. This was a case of direct inguinal hernia. (1 + 1 + 2 + 1 + 3)
- Which finding in the above mentioned physical examination is confirmatory of inguinal hernia?
 - What is the surface marking of deep inguinal ring?
 - Difference between direct inguinal hernia & indirect inguinal hernia.
 - What are the boundaries of Hasselbach's triangle?
 - What are the factors/ protective devices which prevent the formation of inguinal hernia?

Q. 3. A. Write short note on any 2 out of 3.

10 Marks

1. Arches of the foot under the heading – their functions, Types, Factors maintaining the longitudinal arches & applied.
2. Bursae around the knee joint with their applied aspect.
3. Factors helping the venous drainage of the lower limb. Add a note on varicose veins.

B. Write short note on.

10 Marks

1. Describe the microscopic structure of the layers of epidermis & their functions.

OR

Describe the microscopic structure of stomach.

2. Describe the microscopic structure of placenta.

OR

Describe the microscopic structure of prostate.

C. Short note on any one out of two .

4 Marks

1. Polymerase chain reaction.
2. Classification of chromosomes.

Section - C

Q. 4. Write short note on any two out of 3.

16 Marks

1. Describe portal vein in details. Give the different sites & anatomical basis of portocaval anastomosis.
2. Describe ureter under following – length, course, parts, relations, sites of anatomical constrictions, & its blood supply. Add a note on ureteric colic.
3. Describe uterus under following – location & parts, axis, relations, & blood supply. Add a note on anatomical basis of prolapse of uterus.

Q. 5. A. Write short note on any two out of 3.

10 Marks

1. Thoracic duct - its formation, course, termination, tributaries & applied aspect.
2. Describe pleura. Add a note on pneumothorax.
3. Give the formation, course, tributaries & termination of coronary sinus.

B. Write short note on any two out of 3.

10 Marks

1. Vitellointestinal duct & its anomalies
2. Factors responsible for descent of testis. Add a note on cryptorchidism.
3. Development of kidney & its anomalies.

C. Write short note on any one.

4 Marks

1. Magnetic resonance angiography.
 2. Describe the physician role & responsibility to society & the community that she /he serve.
 3. Bony landmarks for superior extensor retinaculum in lower limb & structures passing beneath it.
-



RAN - 2006000101020001-S

RAN-2006000101020001-S

1st MBBS Examination January - 2024

Physiology : Paper - I

Time: 3 Hours]

[Total Marks: 100

સૂચના : / Instructions

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of signs on your answer book

Name of the Examination:

1st MBBS

Name of the Subject :

Physiology : Paper - I

Subject Code No.: 2006000101020001-S

Seat No.:

--	--	--	--	--	--

Student's Signature

Section - A : MCQ

(20 marks)

- 1) Dehydration develops more rapidly and is frequently more severe in children than adults because in children :
 - a. ECFV/ICFV ratio is smaller
 - b. ECFV/ICFV ratio is same
 - c. Total body water is larger
 - d. Total ECFV is smaller
- 2) Nernst equation deals with :
 - a. Oxygen uptake by the body
 - b. Forces acting on ions across the cell membrane
 - c. Cellular ATP levels
 - d. Plasma bicarbonate level
- 3) Intrinsic factor of castle is secreted by which of the following cells in gastric glands:
 - a. Chief cells
 - b. Enterochromaffin cells
 - c. Parietal or oxyntic cells
 - d. B cells
- 4) Electrical coupling between adjacent cells in visceral smooth muscle can be attributed to which of the following?
 - a. Dense bodies
 - b. Gap junctions
 - c. Intermediate fibers
 - d. Mechanical junctions

- 5) A single contraction of skeletal muscle is most likely to be terminated by which of the following actions?
 - a. Closure of the postsynaptic nicotinic acetylcholine receptor
 - b. Removal of acetylcholine from the neuromuscular junction
 - c. Removal of Ca^{2+} from the terminal of the motor neuron
 - d. Ca^{2+} reuptake by Sarcoplasmic Reticulum.
- 6) Sequence of events involved during phagocytic mechanism are
 - a. Chemotaxis - Diapedesis - Opsonization - Phagocytosis
 - b. Diapedesis - Opsonization - Chemotaxis - Phagocytosis
 - c. Diapedesis - Chemotaxis - Opsonization - Phagocytosis
 - d. Phagocytosis - Diapedesis - Chemotaxis - Opsonization
- 7) Which is **WRONG** regarding von Willebrand's factor?
 - a. Regulates circulating level of factor VIII
 - b. Produced by endothelial cell
 - c. Prevents platelet adhesion to collagen
 - d. Factor VIII gets activated after separating from it
- 8) Widely used clinical test for estimation of GFR is
 - a. Inulin clearance
 - b. Creatinine clearance
 - c. Sucrose clearance
 - d. Radioactive cobalt labeled vitamin B12
- 9) Decompression sickness :
 - a. Results from CO_2 bubbles in the body fluids
 - b. Can be prevented by rapid decompression
 - c. Is characterized by pains and sometimes paralysis
 - d. Can occur if one descends a mountain too rapidly
- 10) Functional residual capacity of lung :
 - a. Is the volume remaining in the lungs after a forceful expiration
 - b. In normal individual is 1100 ml.
 - c. Represents the point of the breathing cycle where the lung tissue elastic recoil and chest wall outward expansion are balanced and equal.
 - d. Is equal to $\text{RV} + \text{ERV} + \text{TV}$
- 11) Right shift of HbO_2 is observed in

a. Hypothermia	b. Alkalosis
c. Increased 2, 3 - DPG	d. Hypocapnoea

- P1787**

- 20) During acclimatization to high altitude all of the following take place **EXCEPT** :
- Increase in minute ventilation
 - Increase in the sensitivity of central chemoreceptors
 - Increase in the sensitivity of carotid body to hypoxia
 - shift of HbO_2 dissociation curve to the left

Section - B

(40 marks)

Q. 1. Long Answer Questions.

(10 marks)

- 1) A 50 old male with type 1 personality, a heavy smoker and an alcoholic came with complain of retrosternal burning and abdominal pain 2-3 hours after the meal. The burning was relieved on having a glass of cold milk.
- Name this pathological condition. - 1 mark
 - Enumerate few causes for this condition. - 1 mark
 - Describe the Davenport mechanism of HCl secretion. - 5 marks
 - What is the physiological basis of treatment for this condition. - 3 marks

Q. 2. Answer in Short. (Any 5 out of 6)

(5 × 3 = 15 marks)

- Explain the physiological basis of management of myasthenia gravis.
- Fight and flight reaction
- Erythropoietin.
- Intercellular Junctions.
- Micturition Reflex.
- Doctor patient relationship

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

(3 × 5 = 15 marks)

- Apoptosis.
- Cell mediated Immunity.
- Factors affecting Cardiac output.
- Chemical regulation of respiration

Section - C

(40 marks)

Q. 4. Long Answer Questions.

(10 marks)

Define blood pressure. - 1 mark

Enumerate various regulatory mechanisms for maintaining arterial blood pressure. - 4 marks

Describe baroreceptor mechanism. - 4 marks

What is orthostatic hypotension. - 1 mark

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

(5 × 3 = 15 marks)

- a. Erlanger Gasser classification of nerve fibres
- b. Monge's disease
- c. Pharyngeal phase of Deglutition
- d. Tubulo-glomerular feedback mechanism
- e. Endoplasmic Reticulum
- f. Lymph

Q. 6. Short notes. (Any 3 out of 4)

(3 × 5 = 15 marks)

- a. Describe walk along theory of muscle contraction
 - b. Platelets
 - c. Functions of Saliva
 - d. Dead space
-



RAN-2006000101020002-S

Ist MBBS Examination January - 2024

Physiology : Paper - II

Time: 3 Hours]

[Total Marks: 100

સૂચના : / Instructions

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of signs on your answer book

Name of the Examination:

Ist MBBS

Name of the Subject :

Physiology : Paper - II

Subject Code No.: 2006000101020002-S

Seat No.:

--	--	--	--	--	--

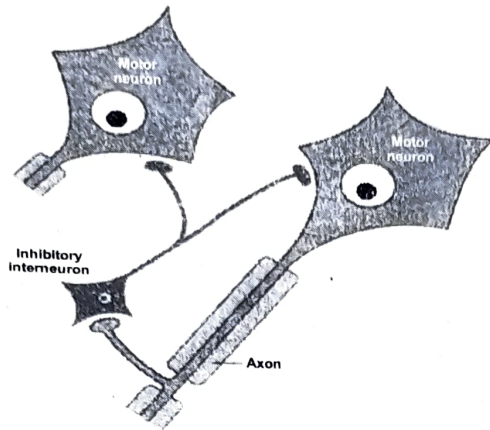
Student's Signature

Section - A : MCQ

(20 marks)

- 1) Stereognosis is lost if there is damage to :
 - a) Dorsal column
 - b) Cerebellum
 - c) Motor cortex
 - d) Basal ganglia
- 2) After falling down from a staircase a young woman is found to have partial loss of voluntary movement on the right side of the body and loss of pain and temperature sensation on the left side below the mid-thoracic region. The probable site of lesion is
 - a) Transection of the right half of the spinal cord in the thoracic region
 - b) Transection of the left side of the spinal cord in the thoracic region
 - c) Transection of sensory and motor pathways on the right side of the pons
 - d) Transection of the left half of the spinal cord in the lumbar region
- 3) Regarding lower motor neurone disease, which sentence is FALSE :
 - a) It involves large number of muscles
 - b) Causes eventual wasting of the muscles concerned.
 - c) deep reflexes are abolished.
 - d) Superficial reflexes are abolished

4) Following diagram shows _____.



- a) Direct synaptic inhibition b) Renshaw cell inhibition
c) Feed forward inhibition d) Presynaptic inhibition
- 5) Place the events of the Action Potential in their correct sequence.
- A. Sodium Gates Close Potassium Gates Open
B. Depolarisation
C. Resting Potential Restored
D. Repolarisation
E. Active Transport of Na^+ & K^+
F. All Sodium Gates open
- a) A-B-C-D-E-F b) D-F-C-B-E-A
c) F-B-A-D-E-C d) F-E-D-C-A-B
- 6) Highest integration centre for autonomic nervous system is :
- a) Cerebellum b) Hypothalamus
c) Spinal cord d) Basal Ganglia
- 7) Following cell helps in myelination :
- a) WBC b) Oligodendrocyte
c) RBC d) Astrocytes
- 8) Hormones produced by anterior pituitary gland are all EXCEPT :
- a) Aldosterone b) Growth hormone
c) Thyroid stimulating hormone d) Follicle stimulating hormone
- 9) Vasopressin is secreted by :
- a) Paraventricular nucleus b) Supra optic nucleus
c) Anterior nucleus d) Posterior nucleus

- 10) Which of the following hormone increases during surgical stress :
- | | |
|-------------|-------------|
| a) Estrogen | b) Cortisol |
| c) Insulin | d) Gastrin |
- 11) Osteoclasts are inhibited by :
- | | |
|-----------------------------------|--|
| a) Parathyroid hormone | |
| b) Calcitonin | |
| c) 1, 25 dihydroxycholecalciferol | |
| d) Insulin | |
- 12) Glucagon is secreted by :
- | | |
|----------------|----------------|
| a) Alpha cells | b) Beta cells |
| c) Delta cells | d) Gamma cells |
- 13) Steroid secreted by testis is :
- | | |
|--------------------|---------------------------|
| a) Testosterone | b) Di hydro testosterone |
| c) Androstenedione | d) Dehydroepiandrosterone |
- 14) Capacitation of sperm occurs in :
- | | |
|---------------|-------------------------|
| a) Epididymis | b) Vas deference |
| c) Uterus | d) Seminiferous tubules |
- 15) Inhibin is secreted by :
- | | |
|------------------|---------------------|
| a) Stroma | b) Ovarian follicle |
| c) Corpus luteum | d) Cervix |
- 16) Corpus luteum is maintained by :
- | | |
|-------------|-----------------|
| a) FSH | b) LH |
| c) Estrogen | d) Progesterone |
- 17) The receptors for bitter taste are located at :
- | | |
|--------------------|-----------------------------|
| a) Tip of tongue | b) Behind tip of tongue |
| c) Sides of tongue | d) Posterior part of tongue |
- 18) Primary auditory cortex lies in which part of cerebral cortex :
- | | |
|-------------------|------------------|
| a) Occipital lobe | b) Temporal lobe |
| c) Frontal lobe | d) Parietal lobe |
- 19) Receptors of hearing are :
- | | |
|---------------------------------|---------------------|
| a) Rods | b) Cones |
| c) Hair cells in organ of corti | d) Multipolar cells |

- 20) Resting membrane potential is mainly due to :
- a) Sodium ions
 - b) Potassium ions
 - c) Chloride ions
 - d) Calcium ions

Section - B

(40 marks)

1. Case based question.

(10 marks)

A 45-year-old female patient came to hospital for chief complain of intolerance to heat and increased sweating. Other clinical features were diarrhea, exophthalmos (protrusion of eyeball), tachycardia, oligomenorrhea, decrease body weight, nervousness and anxiety, fatigue, inability to sleep, mild tremors in hands. Clinical findings were increased BMR, reduced levels of Thyroid stimulating hormone.

- a) What is the most probable diagnosis? Which hormone is involved in the above condition? (2 marks)
- b) Enumerate any 5 actions of the hormone involved in the above case (5 marks).
- c) Name any 3 tests which can be performed to confirm the above diagnosis. (3 marks)

2. Notes. (3 out of 4)

(15 marks)

- 1) Pyramidal tract
- 2) Temperature regulation
- 3) Spermatogenesis
- 4) Myopia

3. Short notes. (5 out of 6)

(15 marks)

- 1) Ovulation
- 2) Functions of oestrogen
- 3) Myelination
- 4) Functions of cerebellum
- 5) Neuroglia
- 6) Reflex arc

Section - C

(40 marks)

1. Structured LAQ.

(10 marks)

Describe visual pathway with diagram and describe defects in visual pathway. (7 + 3)

2. Notes. (3 out of 4)

(15 marks)

- 1) Functions of Oxytocin
- 2) Waves in a normal Electro encephalogram.
- 3) Properties of sensory receptors.
- 4) Stretch reflex.

3. Short notes. (5 out of 6)

(15 marks)

- 1) Saltatory conduction.
 - 2) Pregnancy tests.
 - 3) Acromegaly
 - 4) Summation
 - 5) Functions of frontal lobe.
 - 6) Aqueous humor.
-



RAN-2006000101030001-S

1st MBBS (Biochemistry) Examination January - 2024

Biochemistry : Paper - I

Time: 3 Hours]

[Total Marks: 100

સૂચના : / Instructions

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.

Fill up strictly the details of signs on your answer book

Name of the Examination:

1st MBBS (Biochemistry)

Name of the Subject :

Biochemistry : Paper - I

Subject Code No.: 2006000101030001-S

Seat No.:

--	--	--	--	--	--

Student's Signature

Section - A : MCQ

(20 marks)

Instruction :

- (1) All questions are compulsory.
- (2) Each MCQ has only one correct answer.
- (3) One mark for correct answer. No negative marking.

1. Which of the following organelle has DNA?
 - a) Lysosomes
 - b) Peroxisomes
 - c) Mitochondria
 - d) Microsomes.
2. Sodium dependent glucose transport (SGLT) is example for ;
 - a) Passive diffusion
 - b) Facilitated diffusion
 - c) Primary active transport
 - d) Secondary active transport
3. All of the following abnormalities are observed in obese person, EXCEPT :
 - a) Hypoalbuminemia
 - b) Hyperlipidemia
 - c) Impaired glucose tolerance
 - d) High insulin level
4. All of the following are substrate for gluconeogenesis, EXCEPT :
 - a) Lactate
 - b) Pyruvate
 - c) Acetyl CoA
 - d) Propionyl CoA

5. Refsum's disease is due to accumulation of following fatty acid :
 - a) Phytanic acid
 - b) Palmitic acid
 - c) Arachidonic Acid
 - d) Chaulmoogric acid
6. Infant Respiratory Distress syndrome is caused by deficiency of :
 - a) Cephalin
 - b) Sphingomyelin
 - c) Cardiolipin
 - d) Lecithin
7. Which of the following prostaglandins stimulates platelet aggregation?
 - a) PGF2
 - b) PGE2
 - c) Prostacyclin
 - d) Thromboxane A2
8. Hypercholesterolemia is seen in the following conditions, EXCEPT :
 - a) Diabetes mellitus
 - b) Thyrotoxicosis
 - c) Nephrotic syndrome
 - d) Alcoholism
9. In fasting state, there is increase in all of the following, EXCEPT :
 - a) Gluconeogenesis
 - b) Glycolysis
 - c) Glycogenolysis
 - d) Lipolysis
10. Iron absorption is increased by :
 - a) Ascorbate
 - b) Acidity
 - c) Citrate
 - d) All of the above
11. Physiological uncouplers are all, EXCEPT :
 - a) Thermogenin
 - b) Bilirubin
 - c) Thyroxine
 - d) Cholesterol
12. Negative nitrogen balance is Observed in :
 - a) Pregnancy
 - b) Chronic fever
 - c) Convalescence
 - d) Growth period
13. All are true regarding Juvenile diabetes mellitus, EXCEPT :
 - a) Patients need insulin injections
 - b) Ketoacidosis is common
 - c) Insulin resistance is the cause
 - d) Genetic susceptibility may be inherited.
14. All of the following substances are used to estimate GFR, EXCEPT :
 - a) Inulin
 - b) Creatinine
 - c) Urea
 - d) Uric acid

15. Enzymes for beta oxidation of fatty acids occur in -
 - a) Nucleus
 - b) Plasma membrane
 - c) Mitochondria
 - d) Cytosol
16. All are made from cholesterol, EXCEPT :
 - a) Steroid hormones
 - b) Bile salts
 - c) Vitamin D
 - d) Bile pigments.
17. All of the following coenzymes are required by pyruvate dehydrogenase complex, EXCEPT :
 - a) Thiamine pyrophosphate (TPP)
 - b) NAD
 - c) Biotin
 - d) FAD
18. What is true about Basal Metabolic Rate (BMR)?
 - a) Increases in old age
 - b) Similar for males and females
 - c) Increase during exercise
 - d) Lowered by thyroid hormones
19. Respiratory acidosis is observed in :
 - a) Lactic acidosis
 - b) Vomiting
 - c) Milk-Alkali syndrome
 - d) Pneumonia
20. Hemolyzed samples is not suitable for estimation of which parameter?
 - a) Potassium
 - b) Sodium
 - c) Calcium
 - d) chloride

Section - B

(40 marks)

Instructions for section B & C:

1. Use blue/black ball point pen only.
2. The numbers to the right indicates full marks.
3. Draw diagrams wherever necessary

Q. 2. Long Answer Questions. (ANY TWO)

(2 × 10 = 20)

- A. What are lipoproteins? How lipoproteins are classified? Describe HDL metabolism in detail. Add a note on hyperlipoproteinemias.
(1 + 2 + 3 + 4 = 10)
- B. Describe metabolic alterations in diabetes mellitus. Add a note on hormonal regulation of control of blood glucose levels. (6 + 4 = 10)
- C. Describe the dietary sources, absorption, daily requirement, biochemical functions and disorders of calcium metabolism. Add a note on regulation of serum calcium level. (1 + 2 + 1 + 2 + 1 + 3 = 10)

Q. 3. Write Brief Answer / Justifications/ Biochemical basis. (ANY TEN) **(10 × 2 = 20).**

- a) What are essential fatty acids? Write down examples and sources of EFA.
- b) Fats are burnt in the flame of carbohydrates.
- c) Lead poisoning causes anemia - explain.
- d) HDL cholesterol is called as good cholesterol.
- e) Blood is collected in fluoride bulb for estimation of blood glucose level.
- f) Glucose 6 phosphate dehydrogenase deficiency is a cause of hemolytic anemia.
- g) Aspirin is used as an anti-inflammatory agent.
- h) Premature babies are prone to suffer from acute respiratory distress syndrome.
- i) What is the significance of Rapaport -Leubering cycle in RBC?
- j) Why excessive alcohol intake leads to fatty liver?
- k) Diarrhea causes normal anion gap acidosis. Give justification.

Section - C

(40 marks)

Q. 4. Short answer questions. (ANY FOUR) **(4 × 5 = 20)**

- a) Renal Function Test.
- b) Detoxification reactions.
- c) Complications of Diabetes mellitus.
- d) Describe common barriers of effective communication.
- e) Mucopolysaccharides.

Q. 5. Clinical Cases. (ALL COMPULSORY) **(10 × 2 = 20)**

Case 1 :

A 4 year female child was brought to pediatric OPD with edema over legs and face. She also had discoloration of hairs, skin and retarded growth. On enquiring by doctor, mother told to the doctor that child was on breast milk only for one and half years of 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 hypoalbuminaemia (low serum albumin level) and abdominal sonography showed enlarged liver (fatty liver).

- 1) What are different types of Protein Energy Malnutrition (PEM)?
What is 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 you will suggest for this patient?
- 5) Why there is fatty liver in PEM?

Case 2 :

A 23-year-old male had developed fever with chills and rigors. The family physician suspected malaria and started treatment with primaquine after identification of the parasites in a blood smear. The fever subsided the next day, but the patient continued to feel weak. By the next day these symptoms aggravated and he felt fatigue, dizziness, breathlessness on slightest exertion, headache, and insomnia. Three days later, the patient noticed dark (black) colored urine. On general examination, patient had tachycardia, yellow sclera (jaundice) and marginally enlarged spleen. Following investigations were carried out.

Investigations	Patient's reports	Reference range
Hemoglobin	10.2 g%	11-14 g%
Reticulocyte count	6.3%	Up to 2%
Serum Bilirubin (Total)	8.3 mg/dl	0.1-1 mg/dl
Urine bile pigments	Absent	

Activity of glucose 6-phosphate dehydrogenase (G6PD) was found deficient, i.e. less than 10% of the normal.

- 1) Explain the biochemical basis of symptoms in this patient. —
 - 2) Write the reaction catalysed by G6PD enzyme.
 - 3) Mention various functions of NADPH in our body. (Any four).
 - 4) Mention different liver function tests.
 - 5) Name two glycogen storage disorders with enzyme defect and features?
-



RAN - 2006000101030002 - S

RAN-2006000101030002-S**Ist MBBS (Biochemistry) Examination January - 2024****Biochemistry : Paper - II****Time: 3 Hours]****[Total Marks: 100****સૂચના : / Instructions**

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of signs on your answer book

Name of the Examination:

Ist MBBS (Biochemistry)

Name of the Subject :

Biochemistry : Paper - II

Subject Code No.: 2006000101030002-S

Seat No.:

--	--	--	--	--	--

Student's Signature

Section - A : MCQ**(20 marks)**

Instructions :

- All questions are compulsory.
- Each MCQ has only one correct answer.
- One mark for correct answer. No negative marking.

- All of the following can be formed from tryptophan, EXCEPT :
 - Niacin
 - Serotonin
 - Melanin
 - Melatonin
- Maple syrup urine disease results from the deficiency of :
 - Branched chain a-ketoacid dehydrogenase
 - Branched chain amino acid transaminase
 - Homogentisate oxidase
 - None of the above
- Lesch-Nyhan syndrome is due to deficiency of :
 - Xanthine oxidase
 - Adenine Phosphoribosyl Transferase
 - Adenylate Kinase
 - Hypoxanthine-Guanine Phosphoribosyl Transferase (HGPRTase)

4. A vasodilating compound is produced by the decarboxylation of the amino acid :
 - a. Arginine
 - b. Aspartic acid
 - c. Glutamine
 - d. Histidine
5. Million's reaction is specific for the amino acid :
 - a. Tryptophan
 - b. Tyrosine
 - c. Phenylalanine
 - d. Arginine
6. Non steroidal anti inflammatory drugs (NSAID), such as aspirin act by inhibiting activity of the enzyme :
 - a. Lipoxigenase
 - b. Cyclooxygenase
 - c. Phospholipase A2
 - d. Lipoprotein lipase
7. In early stages of myocardial ischemia the most sensitive indicator is the measurement of the activity of:
 - a. SGPT
 - b. SGOT
 - c. CPK-MB
 - d. LDH
8. Serum acid phosphatase level increases most commonly in :
 - a. Metastatic carcinoma of prostate
 - b. Myocardial infarction
 - c. Wilson's disease
 - d. Liver diseases
9. The ion which activates salivary amylase activity is
 - a. Chloride
 - b. Bicarbonate
 - c. Sodium
 - d. Potassium
10. Each hemoglobin molecule has how many heme group(s) and globin molecule(s) :
 - a. 1, 2
 - b. 4, 4
 - c. 1, 4
 - d. 4, 2
11. In humans, end product of purine catabolism is :
 - a. Uric acid
 - b. Urea
 - c. Allantoin
 - d. Xanthine
12. Retinoblastoma gene is a :
 - a. Proto-oncogene
 - b. Oncogene
 - c. Carcinogen
 - d. Anti oncogene

13. A sigmoidal plot of substrate concentration ($[S]$) verses reaction velocity (V) may indicate:
 - a. Michaelis-Menten kinetics
 - b. Co-operative binding
 - c. Competitive inhibition
 - d. Non-competitive inhibition
14. Casein, the milk protein is :
 - a. Nucleoprotein
 - b. Chromoprotein
 - c. Phosphoprotein
 - d. Glycoprotein
15. In proteins, the alpha-helix and beta-pleated sheet are examples of :
 - a. Primary structure
 - b. Secondary structure
 - c. Tertiary structure
 - d. Quaternary structure
16. In a DNA molecule the thymine concentration is 30%, the guanosine concentration will be :
 - a. 10%
 - b. 20%
 - c. 30%
 - d. 40%
17. Conversion of inosine monophosphate to xanthine monophosphate is catalysed by
 - a. IMP dehydrogenase
 - b. Formyl transferase
 - c. Xanthine-guanine phosphoribosyl transferase
 - d. Adenine phosphoribosyl transferase
18. Isoelectric pH of an amino acid is that pH at which it has a
 - a. Positive charge
 - b. Negative charge
 - c. No net charges
 - d. None of these
19. Genetic defect in sickle cell anaemia is
 - a. Glutamic acid at 6th position in β - Globin chain
 - b. Aspartic acid at 6th position in β - Globin chain
 - c. Valine at 6th position in β - Globin chain
 - d. Glutamine at 6th position in α - Globin chain
20. All the following are sulphur containing amino acids found in proteins, EXCEPT :
 - a. Cysteine
 - b. Cystine
 - c. Methionine
 - d. Threonine

Section - B**(40 marks)**

Instructions for section B & C:

1. Use blue/black ball point pen only.
2. The numbers to the right indicates full marks.
3. Draw diagrams wherever necessary.

Q. 2. Long Answer Questions. (ANY TWO) (2 × 10 = 20)

- A. Explain eukaryotic DNA organization. Add a note on eukaryotic cell cycle. Describe the role of various eukaryotic DNA polymerases. Discuss various drugs affecting DNA replication (3+2+2+3).
- B. Describe the metabolism of tyrosine. Write the biologically important compounds derived and metabolic disorders of tyrosine metabolism. (3+5+2).
- C. Name the active form of Vitamin D, how it is formed in the body? Explain its Metabolic functions, deficiency manifestation and RDA (2+2+3+3).

Q. 3. Write Brief Answer / Justifications/ Biochemical basis. (ANY TEN) (10 × 2 = 20)

- a) Vitamin C deficiency causes gum bleeding. Explain its biochemical basis.
- b) Significance of Chaperones & Prion Protein.
- c) What is gene therapy?
- d) Application of Southern Blotting Techniques
- e) Explain suicide inhibition of enzyme with example.
- f) Alpha-1 antitrypsin causes emphysema.
- g) Excess intake of fat soluble vitamin may be toxic-Justify
- h) Biochemical markers of myocardial infarction
- i) Enlist any 4 tumor markers along with cancers associated with them.
- j) Ethanol is used in the treatment of methanol poisoning
- k) ELISA: Principle and applications.

Section - C**(40 marks)****Q. 4. Short answer questions. (ANY FOUR) (4 × 5 = 20)**

- a) Important products synthesised from Glycine.
- b) Plasma proteins: classification and functions.
- c) Diagnostic and therapeutic applications of enzymes (3+2).
- d) Purine salvages pathway and disorders of Purine metabolism.
- e) Procedure and clinical applications of PCR.

Q. 5. Clinical Cases. (ALL COMPULSORY)**(10 × 2 = 20)****Case 1 :**

A 7 months old boy was admitted to the paediatric ward of Hospital, in the coma. The infant had been normal at birth, but over the past 2 months his condition had deteriorated as he became lethargic and unable to control the movements of his head. His weight was below average and his head circumference was very small. His urine contained high levels of methylmalonic acid and serum levels of vitamin B₁₂ were 20 pg/ml (normal range: 150-1000 pg/ml). His mother indicated that she was a pure vegetarian and had not consumed any animal products including eggs and milk for the last 8 years. She was on oral antibiotics off and on for the last few months due to recurrent attacks of gastroenteritis. This child was exclusively breast fed. His condition was improved dramatically after he was administered a 1 mg/day dose of vitamin B₁₂ for 4 days.

- 1) What are the sources and RDA value for vitamin B₁₂?
- 2) What are the coenzymes forms of vitamin B₁₂?
- 3) Mention the reactions where coenzyme form of B₁₂ is required.
- 4) Is it necessary to employ the combined supplementation of B₁₂ and folate in the treatment of Megaloblastic anemia? Why?
- 5) Absorption, Transport & storage of vitamin B₁₂.

Case 2 :

A 3 year old male child was brought to the paediatric clinic with a history of sore throat and cough about a week back. On examination there was swelling over his face (more during morning) and generalized pitting edema all over the lower limbs.

Blood and urine samples were collected.

Urinary Findings: Dipstick test indicated proteinuria (++++)

Urine proteins: 4570 mg/day

Fasting Plasma Glucose: 86 mg/dl

Plasma proteins: 5.0 g/dl and Plasma Albumin: 2.7 g/dl

Plasma Cholesterol: 342 mg/dl; Triglycerides: 329 mg/dl

Provisional diagnosis of Nephrotic syndrome was made. Child was treated by antibiotics and IV fluids. Later on glucocorticoid was also given.

1. Discusses about Electrophoresis finding in this case.
2. Mention the normal ranges of all parameters tested.
3. Why his serum albumin level is low?
4. Write functions of albumin (any four).
5. What is microalbuminurea? Name the laboratory test to check proteinurea.