P6189

RAN 2506000101022601

RAN-2506000101022601/2406000101020601

Fy. M.B.B.S Examination September - 2026

Physiology (Paper : I) Set-3

Time: 3 Hours] **[Total Marks: 100**

સૂચના : / Instructions

(1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the above details on your answer book

(2) All questions are compulsory except where choice is given.

(3) Select single most appropriate answer for MCQs. NO NEGATIVE MARKING for MCQs.

(4) Write legibly and to the point.

(5) Draw diagrams and flow charts wherever necessary.

Seat No.:

Student's Signature

Section "A" Multiple choice Question I MCQ

Q.1. MCQ Based {20 MCQs} **(1 mark each)1 × 20 = 20M**

1. Which of the following cells produce antibodies ?
   A) Neutrophil B) T lymphocytes
   C) Blymphocytes D) Monocytes

2. Risk of erythroblastosis fetalis will be there in which of the following conditions?
   A) Mother and fetus both Rh negative
   B) Mother and fetus both Rh positive
   C) Mother Rh negative and fetus Rh positive
   D) Mother Rh positive and fetus Rh negative

3. Gastrectomy patients need supplementation of:
   A) Vitamin A B) Vitamin B12
   C) Vitamin C D) Vitamin D

4. 30 years old male after travelling to deep forest woods experienced high grade fever and was evaluated. He was diagnosed to be having a viral fever with platelet count of 60,000 per cu.mm of blood.The laboratory investigation will show :
   A) Normal Bleeding time and Normal Clotting time
   B) Normal Bleeding time and Prolonged Clotting time
   C) Prolonged Bleeding time and Prolonged Clotting time
   D) Prolonged Bleeding time and Normal Clotting time

5. Surfactant lining the alveolar membrane is responsible for:
   A) Preventing alveolar collapse
   B) Less work done during breathing
   C) Preventing pulmonary edema
   D) All of the above

6. Volume of air inspired or expired in each breath in normal respiration is called :
   A) Residual volume
   B) Tidal volume
   C) Inspiratory Reserve volume
   D) Expiratory Reserve volume

7. Values of FEV 1 = 1.3L and FVC = 3.9L signify which of the following clinical conditions?
   A) Normal lung function
   B) Obstructive lung disease
   C) Restrictive lung disease
   D) Both Band C

8. O_2 therapy is not useful in :
   A) Hypoxic hypoxia
   B) Stagnant hypoxia
   C) Histotoxic hypoxia
   D) Anemic hypoxia

9. According to Marey's law :
   A) Heart rate is inversely proportional to blood pressure .
   B) Blood pressure is inversely proportional to Respiratory rate.
   C) Myocardial contraction is directly proportional to venous return
   D) Heart rate is directly proportional to intracranial pressure.

10. Normal mean QRS vector in ECG is :
   A) -59 degrees
   B) zero degrees
   C) +59 degrees
   D) +129 degrees

11. Plateau phase of cardiac action potential is mainly caused by:
   A) Slow K+ influx
   B) Slow Ca +2 influx
   C) Rapid Na + influx
   D) Na + -K+ pump

12. A 74 year old man was bought to medical OPD with slow heart rate, dizzy spells and sudden fainting episodes. His ECG shows normal p wave rate, PR interval is 0.32 s and failure of some p waves to conduct to ventricles and dropped beats. What is the most likely cause?
   A) First degree Heart Block
   B) Second degree Mobitz type I heart block
   C) Second degree Mobitz type II heart block
   D) Third degree Heart Block

13. During moderate exercise which of the following is observed ?
   A) Increase in both systolic and Diastolic BP
   B) Increase in SBP and decrease in pulse pressure
   C) Decrease in Diastolic BP
   D) Increase in SBP, no change in DBP and increase in pulse pressure

14. Achalasia cardia is a condition that represents a state of:
   A) Failure of opening of Lower esophageal sphincter
   B) Regurgitation of food from stomach
   C) Failure of opening of pyloric sphincter
   D) Failure of opening of ileocecal valve

15. What abnormality is there in sickle cell anemia?
A) Valine is replaced byglutamic acid at 6th position of alpha chain of hemoglobin.
B) Valine is replaced byglutamic acid at 6th position of beta chain of hemoglobin.
C) Glutamic acid is replaced by valine at 6th position of alpha chain of hemoglobin.
D) Glutamic acid is replaced by valine at 6th position of beta chain of hemoglobin.

16. Which of the following can result in gastric ulcer by damaging the mucosal barrier and increasing acid secretion?
A) Oily food
B) H. Pylori
C) Eile salts
D) Epidermal growth factor

17. Inulin clearance closely resembles to :
A) GFR
B) Renal plasma flow
C) Renal tubular secretion
D) Renal blood flow

18. Type I muscle fibers found more in Marathon runners are :
A) Fast twitch
B) Red
C) White
D) Glycolytic

19. Syncytial nature of the cardiac muscle is due to:
A) Tight junction
B) Gap junction
C) Zonula occludens
D) Fascia adherence

20. Normal GFR of a healthy person is :
A) 1200 ml/mi
B) 655 ml/min
C) 300 ml/min
D) 125 ml/min

Section "B"

(40 Marks)

Q.2. Define cardiac output, stroke volume and cardiac index with their normal values. How cardiac output is regulated in health? How it is measured using Fick's principle?

(3+5+2=10 M)

Q.3. **Short Notes - Reasoning type (5 out of 6)** **(3 mark each)** $5 \times 3 = 15M$

a) Differentiate between isotonic and isometric muscle contraction with examples.
b) Why Polycythemia occurs at high altitude?
c) Why Cardiac muscle does not get fatigued and tetanized?
d) Why Plasma proteins are usually not filtered through glomerular membrane?
e) Why Oxygen Hemoglobin dissociation curve shift to right at tissue level?
f) Why there is increase in blood pH after meals?

Q.4. **Short notes (3 out of 4) (5 mark each)** $3 \times 5 = 15$ M

a) Cell mediated immunity
b) Pernicious Anemia

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c) Counter current mechanism of concentration of urine
d) Juxtaglomerular apparatus- structure and functions

Section "C"

(40 Marks)

Q.5. Short notes (4 out of 5) (5 mark each) $4 \times 5 = 20$ M

a) Mechanism of skeletal Muscle contraction
b) Active transport- types and examples
c) Role of chemoreceptors in the regulation of respiration
d) Stages of Deglutition
e) Functions of Bile

Q.6. Short notes (4 out of 5) (5 mark each) $4 \times 5 = 20$ M

a) Rights of patients in doctor patient relationship
b) Effects of exercise on cardiovascular system
c) Peptic Ulcer
d) Acclimatization at High Altitude
e) Micturition reflex & Abnormalities of micturition

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F. Y. MBBS Examination September - 2026

Physiology Paper - 2, SET - 1

Time: 3 Hours] **[Total Marks: 100**

સૂચના : / Instructions

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Q. 1. **MCQs: (20 MCQs) 20 × 1 mark each** **20**

1) A 35 year old laboratory technician accidentally spilled hot water on his right hand. Which tract will carry the sensation of heat towards the brain?
   A) Dorsal column Medial lemniscal system
   B) Pyramidal Tract
   C) Anterior spinothalamic Tract
   D) Lateral spinothalamic Tract

2) A 25 year old soldier has to undergo right leg amputation surgery following a gunshot injury. After a day of surgery he started complaining of severe pain in the right great toe which is actually not there. Which of the following properties of receptor best explains this physiological phenomena?
   A) Law of adequate stimulus. B) Weber Feschner Law.
   C) Law of Projection. D) Law of Adaptation.

3) Which of the following is true of parasympathetic nervous system?
   A) Short preganglionic fiber
   B) 75%of all parasympathetic fibers are in vagus nerves
   C) Norepinephrine is the primary neurotransmitter
   D) Effector cells has alpha or beta receptors

4) Which of the following is the major site of formation of CSF ?
   A) Cisterna magna B) Lateral ventricle
   C) Third ventricle D) Fourth ventricle

5) Which is the active form of Rhodopsin that leads to phototransduction in eye when light energy hits photoreceptors in retina ?
   A) Visual purple B) Bathorhodopsin
   C) Lumirhodopsin D) Metarhodopsin II

6) Which of the following is not the function of Sertoli cells in seminiferous tubules?
   A) Providing nutrition to the developing sperm
   B) Forming blood testes barrier
   C) Secreting testosterone
   D) Secreting inhibin

7) The normal site of fertilization is:
   A) Ovary B) Fallopian Tube
   C) Uterus D) Cervix

8) The multiple changes that takes place in spermatozoa when it comes in the contact with the fluid in the female genital tract which activates spermatozoa for final process of fertilization are known as :
A) Spermiogenesis
B) Spermiation
C) Capacitation
D) Ejaculation

9) Which of the following chemicals are responsible forgiving umami taste sensation?
A) Hydrogen ions
B) Sodium ions
C) Alkaloids
D) L-Glutamate

10) Chemical thermogenesis is due to:
A) Presence of brown fat
B) Decreased thyroxine
C) Shivering
D) Piloerection

11) Which of the following blood parameters increases with increased physical activity?
A) HDL cholesterol
B) LDL cholesterol
C) Triglyceride
D) Glucose

12) A patient having an enlarged thyroid gland was found to have high levels of both TSH and TRH with tachycardia. What is the most likely condition?
A) Endemic goiter
B) Hypothalamic tumor secreting large amount of TRH
C) Pituitary tumor secreting large amount of TSH
D) Grave's disease

13) Trousseau's sign and Chvostek's sign are seen in patients of:
A) Hypoparathyroidism
B) Hyperparathyroidism
C) Hypothyroidism
D) Addison's disease

14) Which hormone is responsible for maintaining Corpus luteum of pregnancy during early pregnancy?
A) Human Chorionic Gonadotropin
B) Human Chorionic Somatomammotropin
C) Estrogen
D) Relaxin

15) Excess aldosterone is associated with:
A) Hyperkalemia
B) Hyponatremia
C) Alkalosis
D) Acidosis

16) Which of the following neuroglial cells help in forming blood brain barrier?
A) Microglia
B) Astrocytes
C) Schwann cells
D) Oligodendrocytes

17) Endocochlear Potential is :
A) –150mv
B) –70mv
C) + 80mv
D) +150mv

18) Which of the following cell structures is involved in chromatolysis during Wallerian degeneration of nerve?
A) Axon cylinder
B) Myelin sheath
C) Node of Ranvier
D) Rough endoplasmic reticulum

19) Receptors and site of action of Antidiuretic Hormone for reabsorption of water from kidneys are:
A) V1 receptors at afferent arteriole
B) V2 receptors at efferent arteriole
C) V1 receptors at PCT and loop of Henle
D) V2 receptors at collecting ducts and tubules

20) Golgi tendon organ controlling muscle tension is innervated by which of the following nerve fibers?
A) Ia
B) Ib
C) II
D) y

Section -B (40M)

Q. 2. Using a flowchart explain the transmission of impulse across a chemical synapse. Enlist the various properties of synapse and explain any six of them citing examples. Enumerate any one excitatory and one inhibitory neurotransmitter. (3+6+1=10M)

Q. 3. **Short notes: Explain Why? (Reasoning type - Any 5 out of 6)** (3×5=15M)

A) Aching and cramping pain is often felt around umbilicus in acute appendicitis even though appendix is situated in right iliac fossa.
B) Oral contraceptive pills are commonly used by females to prevent pregnancy.
C) Lactational amenorrhoea is seen in lactating mothers for a few months after delivery.
D) An ageing person is unable to focus nearby objects and require glasses to read newspaper.
E) Polyuria and polydipsia are classical symptoms of Diabetes Mellitus.
F) Glucocorticoids are widely used as anti-inflammatory agent.

Q. 4. **Write short notes on: (Any 3 out of 4)** (3×5=15M)

A) Parkinson's disease- clinical features and physiological basis of treatment.
B) Functions of Hypothalamus.
C) Taste buds- structure, location and functions.
D) Organ of Corti.

Section -C

Q. 5. **Write short notes on: (Any 4 out of 5)** (4× 5=20M)

A) Cretenism.
B) Functions of oxytocin.
C) Fight or Flight Response.
D) Menstrual cycle- endometrial changes and hormonal regulation.
E) Puberty.

Q. 6. **Write short notes on: (Any 4 out of 5)** (4×5=20 M)

A) Mechanisms of heat loss for temperature regulation.
B) Visual pathway and its lesions.
C) Types of Doctor patient relationships.
D) Types of Aphasia.
E) Acromegaly.
