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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