2406000101020601
EXAMINATION AUGUST 2024
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 MCQs: **20**

1. Which structure within the cell produces ATP (adenosine triphosphate)?
   A. The mitochondria B. The nucleus
   C. Peripheral proteins D. The endoplasmic reticulum

2. Which cell organelles contain an acidic environment capable of digesting a wide variety of molecules?
   A. Lysosomes B. Ribosomes
   C. Centrosomes D. Golgi complex

3. Which form of transport through the plasma membrane requires the expenditure of energy by the cell?
   A. Facilitated diffusion B. Osmosis
   C. Active transport D. Diffusion

4. Most of the iron in the body is present in:
   A. Hemoglobin B. Myoglobin
   C. Ferritin D. Transferrin

5. Hereditary spherocytosis occurs due to mutations in genes coding for:
   A. Spectrin and ankyrin B. Na*-K+ ATPase
   C. Glucose 6 phosphate dehydrogenase D. Pyruvate kinase

6. Heme is converted to bilirubin mainly in the:
   A. Kidneys B. Liver
   C. Spleen D. Bone marrow

7. One of the following processes is NOT part of mechanical digestion. Which One?
   A. Hydrolysis B. Peristalsis
   C. Segmentation D. Mastication

8. Which type of cell produces hydrochloric acid in stomach?
   A. Zymogenic cells B. Parietal cells
   C. Chief cells D. Enteroendocrine cells

9. What is the most important role of gastrin in the digestive system?
   A. To stimulate release of bile and pancreatic juice
   B. To stimulate gastric secretion
   C. To activate pepsinogen
   D. To hydrolyse proteins to polypeptides

10. Of the events that lead to myofilaments sliding over each other, which of the following happens first?
   A. The myosin head engages with the binding site on actin
   B. Troponin changes shape and pulls on tropomyosin
   C. Calcium ions enter the cell cytoplasm
   D. ATP is hydrolysed to ADP and inorganic phosphate

11. Smooth muscle cells may be described by which of the following?
   A. Striated, voluntary, multinucleate
   B. Not striated, voluntary, multinucleate
   C. Striated, involuntary, uninucleate
   D. Not striated, involuntary, uninucleate

12. Which of the following structures has the slowest rate of conduction of the cardiac action potential?
    A. Arterial muscle
    B. Atrioventricular bundle fibers
    C. Purkinje fibers
    D. Ventricular muscle

13. In a resting adult, the typical ventricular ejection fraction has what value?
    A. 20 percent
    B. 30 percent
    C. 60 percent
    D. 80 percent

14. The P.R. interval in an ECG is measured by finding the interval between the:
    A. Beginning of P wave and the beginning of the QRS complex
    B. End of the P wave and beginning of the QRS complex
    C. Beginning of the P wave and the end of the QRS complex
    D. End of the P wave and the end of the QRS complex

15. The Second heart sound is produced by:
    A. Closure of the aortic and pulmonary valves
    B. Opening of the aortic and pulmonary valves
    C. Closures of the mitral and tricuspid valves
    D. Opening of the mitral and tricuspid valves

16. Which part of the nephron is impermeable to water?
    A. Proximal convoluted tubule
    B. Distal convoluted tubule in the presence of ADH
    C. Ascending limb of the loop of Henle
    D. Descending limb of the loop of Henle

17. Which of the following happens as we descend deeper into the kidney medulla?
    A. The concentration of the interstitial fluid doesn't change
    B. The concentration of the interstitial fluid increases
    C. The concentration of the filtrate within the tubule increases
    D. The concentration of the interstitial fluid decreases

18. What is the function of the cilia on the cells that line the bronchial tree?
    A. They help mix the inhaled fresh air with the residual air contained in the bronchial tree.
    B. They slow the movement of air to allow for efficient exchange of gases.
    C. They move the mucus on the cell surface up out of the bronchial tree.
    D. They filter particles from inhaled air.

19. One of the following statements is correct. Which one?
    A. The visceral pleura is attached to the chest wall and the parietal pleura is attached to the lung.
    B. The two lungs and their associated structures are known as the pneumothorax.
    C. The hilum is a serious membrane that surrounds each lung separately.
    D. A negative pressure is maintained between the two lung pleura.

20. What term is applied to the volume of air that moves into the lungs while breathing at rest?
    A. Anatomical dead space
    B. Inspiratory reserve capacity
    C. Tidal volume
    D. Residual volume

SECTION – B 40

Q.2 Long Answer Questions: 10

A 18-year-old girl complaints of breathlessness on exertion, increased fatigue, loss of appetite, on examination there is pallor,tachycardia and Hb levels of 8 gms /dl.

a. Write the diagnosis in the given case. (1 marks)
b. Give the etiological classification of above condition? (4 marks)
c. What other investigations you will do for specific diagnosis. (2 marks)
d. What are the possible treatments? (3 marks)

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

a. Types and functions of T-cells.
b. Distribution of body water in different body fluid compartments
c. Regulation of cardiac output
d. Chloride shift
e. Stages of gastric secretion.
f. Importance of Empathy in managing patient

Q.4 Short notes (Any 3 out of 4) **3*5=15**

a. Homeostasis.
b. Venous return.
c. Blood transfusion.
d. Pancreatic secretions.

SECTION – C 40

Q.5 Long Answer Question: **1*10=10**

Define blood coagulation and describe the Extrinsic Pathway of blood coagulation, with a mention on intravascular anticoagulation mechanism. (2+5+3)

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

a) Motor units
b) Bohr's Effect
c) Lung Compliance
d) Sino - Atrial Node
e) Sarcomere
f) Albumin

Q.7 Short notes: (Any 3 out of 4) **3*5=15**

a) Gastrointestinal Hormones.
b) Glomerular Filtration Rate.
c) Cardiac Cycle.
d) Acclimatization.

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