

Date: 05-08-2024

0824 E202

## First Year MBBS Examination

### I MBBS Physiology Paper 1

Time: 3 hours

Max Marks: 100

*Instructions: 1. Answer to the points. 2. Use separate answer books for each section. 3. Draw diagrams wherever necessary.*

#### Section 1

1. Write the following structured long question  
(Any 1 out of 2) 1x10=10 Marks (10)

- a. Define cardiac cycle and give its duration. Describe the various atrial and ventricular events occurring during cardiac cycle along with pressure and volume changes. (2 + 8)
- b. With the help of a neat labelled diagram describe the Pace maker potential in heart. Explain the efforts of Sympathetic and Parasympathetic stimulation on Pace maker potential. (4 + 6)

2. Case based scenario/ Applied short notes (any 2 out of 3) 2x6=12 marks (12)

- a. A 55-year-old male came to OPD with complaint of pain in chest radiating to left arm when he climbed the stairs to his fourth-floor office. There was no pain at rest. His ECG was recorded. His condition was diagnosed as Angina Pectoris. a) Draw and label a normal ECG as recorded in limb lead 1. (2) b) What as the cause of pain in angina pectoris? How can it be relieved? (1) c) Explain why the pain was radiating to the left arm? (1) d) What are the other investigations required to diagnose such a case? (1) e) Explain the role of daily administration of low dose of aspirin in such a case. (1)
- b. A 10-year-old boy was brought to casualty with complaints of puffiness of face, edema of feet and decreased urinary output since last 3 days. There was past history of repeated sore throat. On examination: Pulse - 90/minute, B.P 150/110 mm Hg Urine examination: Albumin ++ Blood Urea and serum creatinine were increased. He was diagnosed as acute glomerulonephritis. A. What is the relationship between sore throat and acute glomerulonephritis (2) B. Why is there

puffiness of face and edema of feet? (1) C Why albumin was present in his urine? D. Explain the Hypertension in this case. (2)

- c. A 65-year-old man came to medicine OPD with complaint of cough with expectoration since last one week. He was having progressive breathlessness since one month. He was smoking 10 cigarettes per day since last 25 years. On examination chest was barrel shaped. Respiratory rate: 20/minute Lung function test showed: 1) FRC -3.5.Liters 2) FVC -4 Liters 3) FEV:-65% 4) FEV,75% 5) Lung compliance - 0.4 L/cm of water Identify the abnormal Lung function Tests and give their normal values. (1) Calculate the specific lung compliance from above report and give the significance of specific compliance. (2) Explain how emphysema is developed in chronic smokers. (2) Why was his chest barrel shaped? (1)

3. Write short notes on the following, (Any 3 out of 4) 3 X 6 = 18 Marks (18)

- a. Functions of Neutrophils,
- b. Anemias
- c. Rh blood group system.

- d. Active Transport mechanisms across cell membrane.
4. Answer in only 2-3 sentences, (Any 6 out of 6) 5 X 2 = 10 Marks (10)
- a. Positive feedback mechanisms.
- b. Function of Thrombin.
- c. Facilitated Diffusion.
- d. BY Function of Lymphocytes.
- e. Heart Sounds.
- f. Ejection Fraction.

## Section 2

1. Write the following structured long questions.  
(Any 1 out of 2) 1 X 10 = 10 Marks. (10)
- a. Describe the chemical regulation of respiration. Explain in detail Hypoxic Hypoxia. (6+4)
- b. Describe the transport of oxygen from lungs to tissues. Draw a neat labelled diagram of oxygen Haemoglobin dissociation curve.
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Explain the conditions that shift this curve to left or right (5+3+2)

2. Write short notes on (Any 2 out of 3)  $2 \times 6 = 12$  Marks. (12)
    - a. Cardio - respiratory changes during exercise.
    - b. Role of Kidney in maintaining Acid base balance.
    - c. Mechanisms involved in blood clotting.
  3. Write short notes on the following. (Any 3 out of 4)  $3 \times 6 = 18$  Marks (18)
    - a. Glomerular filtration rate.
    - b. Mechanisms of concentration of Urine
    - c. Renal handling of glucose.
    - d. Doctor - Patient relationship
  4. Answer in only 2 - 3 sentences. (Any 5 out of 6)  $5 \times 2 = 10$  Marks (10)
    - a. Obesity
    - b. Mechanisms of Heat gain.
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- c. What is Bohr Effect and Haldane Effect.
- d. What is Oxygen Debt.
- e. what is Scuba Diving.
- f. Why a shipwreck victim drinking sea water cannot survive.

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