



All India Institute of Medical Sciences, Kalyani

First Professional MBBS Examination, September 2025

Time: 3 Hrs.

Physiology (Paper-I)

Marks: 100

INSTRUCTIONS:

- Answer all questions.
- Illustrate your answers with well labelled diagram wherever necessary.
- Answer each section in a separate answer book.

SECTION – B (40 MARKS)

(General Physiology, Blood, Nerve and Muscle, Gastrointestinal physiology and nutrition)

Long answer Question: -

1×10=10

1. Explain the ionic basis of resting membrane potential and action potential. Illustrate with suitable diagrams. Add a note on importance of hyperkalemia on resting membrane potential. (5+3+2)

Short Answer Questions: -

5×4=20

2. Explain denervation hypersensitivity
3. Write short notes on factors regulating erythropoiesis
4. Explain the role of dietary fibers in health and diseases
5. Hazards of blood transfusion
6. Regulation of gastric acid secretion

Very Short Answer Questions: -

5×2=10

7. In oral rehydration salt glucose is added- Explain the physiological basis
8. RBCs being biconcave is beneficial- Explain the physiological basis
9. In neonatal jaundice, unconjugated bilirubin increases; Explain the pathophysiology.
10. Explain post prandial alkaline tide
11. Describe the concept of quantal release at the neuromuscular junction.

SECTION – C (40 MARKS)

(Respiratory physiology, cardiovascular physiology, environmental physiology)

Long answer Question: -

1×10=10

1. What is ventilation – perfusion ratio? How does it vary in erect posture in different regions of lung and why? Why tuberculosis infection is more prevalent at the apex of lung? (2+5+3)

Short Answer Questions: -

5×4=20

2. Write short notes on: (2+2)
 - a. Alveolar ventilation
 - b. Chloride shift
3. Why does standing suddenly from a supine position cause dizziness in some individuals? Explain the baroreceptor reflex involved. (2+2)
4. Mechanisms involved in body temperature regulation
5. Describe the application of Laplace's law in cardiovascular and respiratory system
6. Timed vital capacity- Define and explain the importance.

Very Short Answer Questions: -

5×2=10

7. Cigarette smoking leads to emphysema-Explain the physiological basis
 8. Aspirin is given to prevent acute myocardial infarction- Explain the physiological basis
 9. Explain Cushing's Ischemic reflex
 10. Describe the ECG changes in myocardial function
 11. Describe Windkessel effect.
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