



All India Institute of Medical Sciences, Kalyani

First Professional MBBS Supplementary Examination (Batch-2021-22)

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 - A (50 MARKS)

(General Physiology, Blood, Nerve and Muscle, Gastrointestinal Physiology and Nutrition)

1. Explain the mechanism of gastric acid secretion with help of suitable diagram. Describe the regulation of HCL secretion. Write note on peptic ulcer disease. (4+3+3=10)
2. Explain the pathophysiology of Hemolytic jaundice. Why it is also known as acholuric jaundice? (5)
3. Define action potential and describe the ionic basis of different phases of action potential. (1+4=5)
4. Differentiate between:- (2.5X2=5)
 - a. Simple diffusion and facilitated diffusion
 - b. Graded potential and action potential
5. Explain the molecular basis of contractile mechanism in smooth muscle and the role of calcium in it. (4+1=5)
6. Explain the pathophysiology and hematological findings of Megaloblastic anemia.
7. Define and enumerate the steps of haemostasis. (1+4=5)
8. Differentiate between active and passive immunity (5)
9. Explain the physiological basis of (1X5=5)
 - a. Myasthenia gravis
 - b. Rigor mortis
 - c. Dumping syndrome
 - d. Why blood becomes alkaline following meals
 - e. Why total gastrectomy causes anaemia

SECTION – B (50 MARKS)

(Respiratory physiology, cardiovascular physiology and environmental physiology)

1. Describe the origin and spread of bio-electric potential in cardiac muscle. Write note on pacemaker potential and explain the autonomic nervous system's effect on heart. (3+4+3=10)
2. a. Describe the ECG changes in myocardial infarction (2.5)
b. Draw a well labelled self explanatory colourful diagram of Baroreceptor reflex. (2.5)
3. Describe the oxygen-haemoglobin dissociation curve and the factors affecting it. (3+2)
4. Describe the factors affecting the cardiac out. Describe in brief its measurement. (3+2)
5. Describe the mechanism of transport of oxygen from lungs to tissues. (5)
6. a. Discuss the causes, characteristic features and pathophysiology of anaemic hypoxia. (3)
b. Differentiate between obstructive and restrictive lung disease (2)
7. Describe how does elastance of lung is maintained and its clinical implication. (5)
8. Explain decompression sickness. (5)
9. Describe mechanism of temperature regulation in cold environment. (5)
