



ATAL BIHARI VAJPAYEE MEDICAL UNIVERSITY, LUCKNOW  
MBBS 1st PROFESSIONAL EXAMINATION - JAN -2023

TIME : 3 Hrs

Max. Marks : 100

Note: Attempt all questions. Answer Part- I and Part - II in separate answer books. All part of a question should be answered together.

SUBJECT : PHYSIOLOGY - PAPER - I

PAPER CODE: 2311130002

(1 + 2 + 4 + 4 + 4 = 15 Marks)

**PART - I**

**Q.1 Long Answer Question**

Raju, a 45 year male came to hospital with complaints of tingling, numbness in lower limb, recurrent ulcers in mouth and fatigue since three months. He is a pure vegetarian with normal bowel and bladder habits and no addiction. On examination, his skin was pale. There was sensory loss in distal extremities. On lab investigation his hemoglobin was 9 gm % and peripheral blood smear showed large RBC's and hypersegmented neutrophils. His mean corpuscular volume (MCV) was 108 fl, mean corpuscular hemoglobin (MCH) was 48 pg.

- What could be probable diagnosis
- Give reasons for the same
- Explain the mechanism for development of this disease
- Give the physiological basis of sign and symptoms
- Give function, absorption & metabolism of the substance responsible for the given condition.

(3x 5= 15 Marks)

**Q.2 Short Notes Questions (within 500 words)**

- Primary active transport
- Wallerian degeneration & regeneration
- Gastric emptying

(5x 2 = 10 Marks)

**Q.3 Short Answer Questions (within 100 words)**

- Post-prandial alkaline tide
- Oxygen debt
- White and Red muscle fibers.
- Major cross matching
- Functions of gall bladder

(10x 1 = 10 marks)

**Q.4 Multiple Choice Questions**

1	Substance used to measure extracellular fluid (ECF) compartment is:	2	Pancreatic juice rich in water and electrolyte and poor in enzyme is secreted in response to:
a) Deuterium oxide		a) Cholecystokinin	
b) Evans blue dye		b) Secretin	
c) Aminopyrine		c) Gastrin	
d) Sucrose		d) Pancreozymin	
3	Which of the following is the most important cholinergic:	4	The ATPase activity of which of the following protein is altered to regulate skeletal muscle contraction:
a) Secretin		a) Myosin	
b) CCK		b) Actin	
c) Gastrin		c) Troponin	
d) Bile salts		d) Tropomyosin	
5	Gap junctions are made up of proteins called:	6	Which coagulation factor is Vitamin K dependent:
a) Clathrin		a) V	
b) Cadherin		b) VI	
c) Connexin		c) VII	
d) Calcineurin		d) VIII	
7	Preganglionic parasympathetic nerve fibers are:	8	Maximum potassium ion secretion is seen in:
a) Long and unmyelinated		a) Saliva	
b) Short and unmyelinated		b) Gastric secretions	
c) Long and myelinated		c) Colonic secretions	
d) Short and myelinated		d) Jejunal secretions	
9	Repolarization of ventricular muscle:	10	In smooth muscle calcium calmodulin complex activates:
a) Occurs last at Apex		a) Muscle phosphorylase	
b) Begins at AV node		b) Protein kinase	
c) Begins in epicardium		c) Glucokinase	
d) Begins in septum		d) 2,3 DPG	



**PART - II**
**PAPER CODE:**
**2311230002**
**Q.1 Long Answer Question**
**(5 + 2 + 8 = 15 Marks)**

Sita is a 55-year-old manager at a department store. One morning, she awakened from a deep sleep and realized that she was more than an hour late for work.

She panicked, momentarily and then jumped out of bed, and suddenly stood up. Briefly, she felt lightheaded and thought she might faint. She had the sensation that her heart was "racing". As she walked toward the bathroom, she noticed that her light-headedness disappeared. The rest of her day was uneventful.

- What is the most probable cause of her light-headedness and fainting sensation?
- What is the name given to such condition?
- Her light-headedness was transient, and she recovered soon. Explain the mechanism of recovery?

**Q.2 Short Notes Questions (within 500 words)**
**(3x 5 = 15 Marks)**

- Decompression sickness
- Distributive shock
- Atrioventricular block

**Q.3 Short Answer Questions (within 100 words)**
**(5x 2 = 10 Marks)**

- Physiological significance of Functional residual capacity (FRC).
- Atrioventricular (AV) delay and its significance.
- Forced Expiratory Volume 1 (FEV1) and its clinical significance
- Hering-Beurer reflex and its significance.
- Two changes in ECG during myocardial infarction (MI).

**Q.4 Multiple Choice Questions**
**(10 x 1 = 10 Marks)**

1 The smooth muscle relaxing effect of endothelial derived relaxing factor (EDRF) i.e. nitric oxide are mediated by increase in : a) cAMP b) cGMP c) Endothelin d) Adenosine	2 Opening of semilunar valve occurs at the end of which phase of cardiac cycle: a) Isovolumetric contraction phase b) Isovolumetric relaxation phase c) Rapid ejection phase d) Rapid filling phase
3 The pleural pressure of a normal 56-year-old woman is approximately -5 cm H <sub>2</sub> O during resting conditions immediately before inspiration (i.e., at functional residual capacity). What is the pleural pressure (in cm H <sub>2</sub> O) during inspiration: a) 3 b) 0 c) -3 d) -7	4 Which of the following cells are deficient in a premature infant with respiratory distress syndrome: a) Type I alveolar cells b) Type II alveolar cells c) Alveolar macrophages d) Alveolar capillary endothelial cells
5 Among which hypoxia arterio-venous (A-V) difference is maximum: a) Hypoxic hypoxia b) Anaemic hypoxia c) Stagnant hypoxia d) Histotoxic hypoxia	6 In Jugular venous pressure (JVP) "c" wave represent: a) Atrial contraction b) Fall in the right atrial pressure c) Bulging of tricuspid valve ring into right atrium d) Fall in the right atrial pressure
7 SA Node is the pacemaker of the heart because : a) It has highest conduction velocity b) It has slowest conduction velocity c) It has maximum gap junctions d) Generates impulses at the highest rate	8 During standing, the apex of lung has : a) High blood flow b) High ventilation c) High ventilation perfusion ratio d) Low ventilation perfusion ratio
9 Reflex responsible for tachycardia during right atrial distension is: a) Bainbridge reflex b) Bezold Jarisch reflex c) Cushing reflex d) J reflex	10 Clamping of the carotid arteries above the carotid sinus results in : a) Increase in blood pressure & increase in heart rate b) Increase in blood pressure & decrease in heart rate c) Decrease in blood pressure & increase in heart rate d) Decrease in blood pressure & decrease in heart rate