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63(FY) SEM-4/MAJ/ZOOMAJ2034

2025

ZOOLOGY

(Major)

Paper : ZOOMAJ2034

*(Physiology : Life-Sustaining Systems)*

Full Marks : 50

Pass Marks : 20

Time : Two hours

***The figures in the margin indicate full marks for the questions.***

1. Answer the following questions: **(all compulsory)** 1×5=5

- (i) Which chamber of the heart receives oxygenated blood from the lungs?
- (a) Right atrium
  - (b) Right ventricle
  - (c) Left atrium
  - (d) Left ventricle

(ii) Which ion is essential for cardiac muscle contraction?

- (a) Sodium
- (b) Potassium
- (c) Calcium
- (d) Chloride

(iii) Pulmonary ventilation refers to—

- (a) Exchange of gases between alveoli and blood
- (b) Movement of air in and out of the lungs
- (c) Exchange of gases between blood and tissues
- (d) Cellular respiration

(iv) Which of the following acts as a cofactor for the activation of clotting factors II, VII, IX, and X?

- (a) Vitamin B12
- (b) Iron
- (c) Calcium
- (d) Vitamin K

(v) Which of the following is the common progenitor cell in haemopoiesis?

- (a) Hematopoietic stem cell (HSC)
- (b) Myeloblast
- (c) Lymphoblast
- (d) Megakaryocyte

2. Answer the following questions : **(any five)**  
2×5=10

- (a) What is the Haldane effect?
- (b) Define inspiratory reserve volume and expiratory reserve volume.
- (c) Name the hormone responsible for water reabsorption in the collecting duct.
- (d) What is the Rh factor?
- (e) What is the pacemaker of the heart?
- (f) What is P wave in an ECG?
- (g) Write the role of Gastrin and CCK in digestion.

3. Answer the following questions : **(any five)**  
5×5=25

- (a) What is the sequence of electrical events in the cardiac conduction system?

- (b) What is the role of the renin-angiotensin system in blood pressure control?
- (c) Discuss how carbohydrates are digested and absorbed in the gastrointestinal tract.
- (d) Explain the structure and function endocrine parts of the pancreas.
- (e) What is oxygen-hemoglobin dissociation curve? Mention factors that affect the affinity of hemoglobin for oxygen? 1+4=5
- (f) What is hypoxia? Discuss different types and their physiological causes. 1+4=5
- (g) Explain the *three* main processes involved in urine formation.
- (h) Write the role of ADH in regulating water balance.

4. Answer the following question : **(any one)** 10×1=10

- (a) Discuss the mechanisms by which carbon dioxide is transported in the blood.
- (b) Explain the process of blood clotting. Write the functions of platelets and clotting factors. 6+4=10