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[This question paper contains 6 printed pages.]



Your Roll No.....

**Sr. No. of Question Paper : 1382**

Unique Paper Code : 32231402

Name of the Paper : Animal Physiology : Life  
Sustaining systems

Name of the Course : **B.Sc. (Hons.) Zoology**

Semester : IV

Duration : 3 Hours

Maximum Marks : 75

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **FIVE** questions in all.
3. Question No. **1** is compulsory.
4. Draw diagrams where ever required.

1. (a) Define the following terms : (5)

(i) Antiporter

(ii) Plasminolysis

(iii) Haustral churning

P.T.O.

(iv) Herring-Breuer reflex

(v) Ectopic focus

(b) Differentiate between the following : (10)

(i) Isovolumetric ventricular systole and diastole

(ii) Peristalsis and Segmentation

(iii) Bohr and Haldane effect

(iv) Hemopoiesis and Hemostasis

(v) Tubular secretion and tubular absorption

(c) Expand the following (any FOUR) : (2)

(i) TPO

(ii) IRV

(iii) MMC

(iv) ECG

(v) MALT

(d) Give **ONE** word for the following : (4)

(i) The cells secreting lysozyme in the small intestine.

(ii) The clotting factor responsible for platelet aggregation.

(iii) Ions that move from the peritubular capillaries into the tubular lumen.

(iv) The physiological condition when arterial  $\text{PCO}_2$  is less than 40 mmHg.

(e) Give the location and function of any **FOUR** of the following : (4)

(i) Kupfer cells

(ii) K cells

(iii) Chordae tendineae

(iv) Septal cells

(v) Podocytes



- (f) Give reasons for any **TWO** of the following : (2)
- (i) Facultative reabsorption of water occurs only in DCT.
  - (ii) A physiological condition that leads to impaired absorption of Vitamin B<sub>12</sub>.
  - (iii) The intrapleural pressure is always sub-atmospheric.

2. (a) How is the blood pressure regulated? Explain.

(b) Describe the intrinsic and extrinsic clotting pathways. (7,5)

3. (a) What are the different phases of digestion? Discuss in detail.

(b) Write a note on absorption in small intestine. (8,4)

4. (a) What are the various mechanisms of Tubular absorption and Tubular secretion in PCT?

(b) Draw the detailed structure of a nephron.

(c) Why glomerular capillary pressure is higher than the pressure in normal blood capillaries? (7,3,2)

5. (a) Explain the interplay of erythrocyte and haemoglobin in carrying O<sub>2</sub> and CO<sub>2</sub>.

(b) Describe the muscles responsible for thoracic movements during inhalation and exhalation. (8,4)

6. (a) Describe the structural and functional characteristics of cardiac muscle tissue and the conduction system of the heart.

(b) Discuss the unique features of action potential and contraction of cardiac muscle fibers. (6,6)

7. (a) Draw and explain portal triad. Briefly discuss the functions of the liver.

(b) Explain the reasons preventing the clotting of blood in blood vessels.

(c) Given that the Cardiac Output is 5 l/minute, Heart Rate is 75 beats/minute and the End Diastolic Volume is 140 ml/minute, calculate the stroke volume of the patient. (7,3,2)

8. Write short notes on any **three** of the following :

(3×4=12)

- (i) Life cycle of RBC
- (ii) Countercurrent exchange mechanism
- (iii) Coronary circulation
- (iv) Pulmonary volumes and capacities.