

**M.Sc. 2nd Semester Examination, 2025**

**ZOOLOGY**

*( Biophysics )*

PAPER — ZOO-203

*Full Marks : 25*

*Time : 1 hour*

**Answer all questions**

*The figures in the right hand margin indicate marks*

*Candidates are required to give their answers in their own words as far as practicable*

1. Answer of the following questions (any two) :

2 × 2

- (a) Why does cell membrane noted as 'amphipathic' in nature ? Write a note on : RBC-Ghost.

1 + 1

( Turn Over )

( 2 )

- (b) From the standpoint of thermodynamics, the earth is an 'Open as well as closed system'—Explain.
- (c) State the factors that are affecting Blood Flow in human. What is 'Reynolds number' ? 1 + 1
- (d) Why hydrated  $K^+$  moves faster than  $Na^+$  through plasma membrane ?

2. Answer of the following questions (any two) :

- 4 × 2
- (a) Define colloids with two distinct properties. Write a note on: Helmholtz-Guoy electrical double layer. 1 + 1 + 2
- (b) Why CPD (Critical Point Drying) is essential for SEM-sample preparation ?
- (c) Mention the definite function of electromagnetic lenses used in transmission electron microscope (TEM).

(d) Cite an experiment to prove the mobility of protein molecules through the lipid bilayer of plasma membrane.

3. Answer of the following question (any one) :

(a) Explain electro dialysis and its application.  $8 \times 1$   
Write notes on (i) Brownian Movement of Colloidal Solution (ii) Freeze etching technique.  $4 + 2 + 2$

(b) Answer the following (any four) :  $2 \times 4$

(i) Use of electron gun in transmission electron microscope (TEM)

(ii) Dual function of  $OsO_4$

(iii) Electron Amplification in SEM

(iv) Artificial biomembrane

(v) Reverse Osmosis.

[ Internal Assessment – 5 Marks ]

