Ref. No.: SC/INSC/PG/CORE/TH/MI 104B/2023

M.Sc. (Instrumentation) Examination, 2023
1st Year, 1st Semester
BIO MEDICAL SCIENCE – I

Time: Two Hours **Full Marks: 40**

Answer any four of the following questions

1. What is cell theory? How do you describe plasma membrane has "fluid mosaic" structure"? What is membrane fluidity?

[2+5+3]

2. What is zwitterionic state of an amino acid? Describe the properties of peptide bond. Describe different types of commonly available secondary structures.

[2+2+6]

3. What are the basic differences between enzymatic and non-enzymatic reactions? Describe different models for binding substrate with enzyme in enzymatic reaction. What is the significance of Km. Define the terms coenzyme and prosthetic group.

[2+4+2+2]

4. (a) What are the differences between simple diffusion and facilitated diffusion? What are the factors that control simple diffusion process?
(b) Two containers of equal volume are separated by a membrane that allows free passage of water, but totally restricts passage of solute molecules. Solution A has 2 molecules of the protein albumin (molecular weight 66,000) and Solution B contains 10 molecules of glucose (molecular weight 180). Into which compartment will water flow, or will there be no net movement of water and why?

[4+3+3]

5. How large molecules are transported across the biological membrane? What do you mean by symport and antiport?

[8+2]

6. Describe the blood stage of malaria parasite. Why classical malaria fever takes place every 48 or 72 hours? Why P. vivax and P. ovale can cause relapsing malaria? Why cerebral malaria is fatal ?

[4+1+3+2]