

Ref. No. EX/M.SC./INST./I/I/104B/39/2017

Master of science (Instrumentation) Examination, 2017

(1st Year, 1st Semester)

Paper - V (T-104B)

Biology -I

Time : Two hours

Full Marks : 50

Answer any three of the following questions

Two marks have been allotted for general proficiency.

1. Write down the main differences between prokaryote and eukaryote. What are the limitations of cell theory? "Both lysosomes and vacuoles are endomembrane structures, yet they differ in terms of their functions" ---- Comment. Describe the factors that control membrane fluidity.

[5+2+3+6]

2. How do you justify that an amino acid can act as acid as well as base? Construct the titration curve of an acidic amino acid vs NaOH with proper notation. What is the importance of the -R group (variable radical) in an amino acid molecule? What is the essential condition for one protein molecule to be identical to another protein molecule? What is denaturation of protein? Are there any changes in the primary structure when a protein is denatured?

[3+4+2+3+2+2]

3. What do you mean by the tertiary and quaternary structures of protein? Discuss different interactions which hold a protein into its tertiary and quaternary structures. "Tertiary and quaternary structures are the reflection of the primary structure of protein." ---- Justify.

[6+6+4]

4. How do you classify the enzymes on the basis of reaction type? Discuss different models for enzyme-substrate interaction. How enzyme activity is related to pH and temperature? What is competitive inhibition of enzyme action?

[4+ 6 +4+ 2]

5. Describe different types of passive transport. How simple diffusion differs from osmosis. What are the factors that control diffusion? What is exocytosis? What is pinocytosis?

[6+2+4+ 2+2]