0212E1383

Candidate's Seat No :_____

B.Sc. Sem.-1 Examination
CC-1 P 101
Biotechnology
December-2025

Time : 2-30 Hours] **[Max. Marks : 70**

BT-101 Introduction to Biotechnology and Molecules of Life

Q.1 Describe nucleotides and nucleosides in detail. Discuss the different types of purine and pyrimidine bases along with their structural features. Mention any four important functions of nucleic acids. 14

OR

Q.1 (A) Describe the structure and biological role of tRNA with a neat labelled diagram. 7
(B) State the major characteristics and structural properties of B-DNA. 7

Q.2 Discuss in detail the important physicochemical properties of amino acids. Provide a comprehensive classification of amino acids based on the nature of their side (R) groups. 14

OR

Q.2 (A) Compare the α-helix and β-pleated sheet protein conformations, highlighting their structural features with suitable diagrams. 7

(B) Mention several key biological roles performed by proteins in living organisms. 7

Q.3 Provide an elaborate description of the physical as well as chemical properties exhibited by carbohydrates.. 14

OR

Q.3 (A) Explain the structure and function of ribose and deoxyribose. 7
(B) Describe the functions and structures of glycogen and cellulose. 7

Q.4 Explain the classification of various types of lipids in detail. 14

OR

Q.4 (A) Explain rancidity and its types. 7
(B) Enlist the functions and structure of cholesterol. 7

Q.5 Answer the following (Any SEVEN) – 14

1. What is the denaturation of proteins?
2. Name the bonds that stabilize the quaternary structure of proteins.
3. What changes occur to an egg upon boiling?
4. What are the sugar units that make-up starch?
5. What is an epimer?
6. What are complex lipids?
7. What is the primary role of tRNA in protein synthesis?
8. Define amphipathic molecules.
9. Name the enzyme responsible for DNA replication.
10. What is the basic unit of a lipid called?
11. What is a peptide bond?