

B.Sc. Semester - 2 (NEP-2020) Examination

MARCH/APRIL-2025

BOT: Biomolecules (Minor-2)

Time: 2.00 Hours

Mark: 50

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

-
- | | | |
|-----|---|------|
| Q-1 | 1) Discuss the different types of chemical bonds. | (10) |
| | 2) Differentiate between endergonic and exergonic reactions. Explain the concept of free energy. | |
| | OR | |
| Q-1 | 1) Define pH and explain its importance in biological systems. | (10) |
| | 2) State and explain the first and second law of thermodynamics. | |
| Q-2 | 1) Explain function of Carbohydrates with five examples. | (10) |
| | 2) Describe the functions of proteins. | |
| | OR | |
| Q-2 | 1) Explain: The structure of proteins. | (10) |
| | 2) What is isoelectric point? Explain its significance with respect to proteins. | |
| Q-3 | 1) Describe the structure and function of Fatty acids. | (10) |
| | 2) Describe the structure of nitrogenous bases found in Nucleic acids. | |
| | OR | |
| Q-3 | 1) Explain the structure of A-DNA, B-DNA and Z-DNA. | (10) |
| | 2) Explain the structure and properties of triacylglycerols. | |
| Q-4 | 1) Briefly describe the classification of enzymes, based on their reaction types. | (10) |
| | 2) Explain how factors such as pH, temperature and substrate concentration affect enzyme activity. | |
| | OR | |
| Q-4 | 1) Discuss the different types of enzyme inhibition(competitive, non-competitive, uncompetitive) with examples. | (10) |
| | 2) Explain “lock” and “key” and “induced fit” models of enzyme-substrate interaction. | |
| Q-5 | 1) Describe: How do buffers work | (10) |
| | 2) Describe the four levels of protein structure (primary, secondary, tertiary, quaternary) and how each level is formed? | |
| | OR | |
| Q-5 | 1) Describe Structure of Nucleotides. | (10) |
| | 2) Short note on Active Site in Enzymes | |
