

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

MARCH/APRIL-2025

BIT: Fundamental of Biochemistry (Multidisciplinary Course)

Time: 2:00 Hours

Marks: 50

Instructions:

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

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| Que-1 | (1) Differentiate between ionic and covalent bonds with examples. | (05) |
| | (2) Explain the role of hydrogen bonding in the properties of water. | (05) |
| | OR | |
| Que-1 | (1) What is pH? Explain the role of buffers in biological systems. | (05) |
| | (2) Describe the structure of an atom with reference to subatomic particles. | (05) |
| Que-2 | (1) Discuss the classification and nomenclature of enzymes. | (05) |
| | (2) Explain the role of coenzymes and cofactors in enzyme function. | (05) |
| | OR | |
| Que-2 | (1) What are allosteric enzymes? Explain their mechanism of action. | (05) |
| | (2) Describe the catalytic mechanisms used by enzymes. | (05) |
| Que-3 | (1) Derive the Michaelis-Menten equation for enzyme kinetics. | (05) |
| | (2) Discuss the different types of reversible enzyme inhibition. | (05) |
| | OR | |
| Que-3 | (1) How does covalent modification regulate enzyme activity? | (05) |
| | (2) Explain the significance of the Michaelis constant (K_m) in enzyme kinetics. | (05) |
| Que-4 | (1) Describe the structure of the phospholipid bilayer in biological membranes. | (05) |
| | (2) Describe the concept of symport and antiport in secondary active transport. | (05) |
| | OR | |
| Que-4 | (1) Explain the proton pump and its role in active transport. | (05) |
| | (2) Differentiate between passive and facilitated diffusion. | (05) |
| Que-5 | (1) What are isoenzymes? Describe their significance with examples. | (05) |
| | (2) Explain the role of molecular interactions in maintaining cell structure. | (05) |
| | OR | |
| Que-5 | (1) Explain the role of transition states in enzyme catalysis. | (05) |
| | (2) What is iron uptake? Describe its significance in microbial metabolism. | (05) |
