

B.Sc. Semester - 4 (NEP-2020) Examination**March/April-2025****BIT: Enzymology (Major-8)****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 | A. Explain the IUB enzyme classification system and provide an example for each class. | (05) |
| | B. Differentiate between coenzymes, cofactors, and prosthetic groups with suitable examples. | (05) |
| OR | | |
| Que-1 | A. What are isoenzymes? Discuss their biological significance with examples. | |
| | B. Define enzymes and briefly discuss their historical background. | |
| Que-2 | A. What are enzyme inhibitors? Discuss their role in regulating enzyme activity. | (05) |
| | B. Explain how factors such as pH, temperature, and substrate concentration affect enzyme activity. | (05) |
| OR | | |
| Que-2 | A. What are multi-enzyme systems? Explain their significance in metabolic pathways with an example. | |
| | B. Describe feedback inhibition and covalent modifications as mechanisms of enzyme regulation. | |
| Que-3 | A. Derive the Michaelis-Menten equation and discuss its applications in enzyme kinetics. | (05) |
| | B. Differentiate between competitive and non-competitive enzyme inhibitions with suitable examples. | (05) |
| OR | | |
| Que-3 | A. Discuss how factors such as pH, temperature, substrate concentration, and inhibitors influence the rate of enzyme-catalyzed reactions | |
| | B. Explain the methods used to determine K_m (Michaelis constant) and V_{max} (maximum velocity) in enzyme-catalyzed reactions. | |
| Que-4 | A. Describe the different methods used for enzyme isolation and purification. | (05) |
| | B. Explain the role of chromatography in enzyme purification. | (05) |
| OR | | |
| Que-4 | A. Describe the applications of immobilized enzymes in industry. | |
| | B. What is enzyme immobilization? Discuss its significance | |
| Que-5 | A. Discuss the important properties of enzymes. | (05) |
| | B. Describe covalent modifications as a mechanism of enzyme regulation. | (05) |
| OR | | |
| Que-5 | A. Explain the significance of enzyme inhibition in drug design. | |
| | B. Write a short note on different methods of enzyme mobilization. | |
