

B.Sc. Semester - 2 (NEP-2020) Examination**JUNE – 2024****BOT: Biomolecules (Major-3)****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 Answer according to instructions: (10)

- (1) Explain the differences between ionic, covalent, and metallic bonds. Provide examples of each type of bond
- (2) Discuss the physical and chemical properties of water that make it essential for life on Earth.

OR

Que.1 Answer according to instructions:

- (1) Define pH and describe how it is measured, Discuss the significance of pH in various fields such as chemistry, biology, and environmental science, providing examples of processes or phenomena where pH plays a critical role.
- (2) Distinguish between: Endergonic and exergonic reactions

Que.2 Answer according to instructions: (10)

- (1) Provide an outline chart outlining the classification of carbohydrates.
- (2) Examine the biological functions fulfilled by proteins within living organisms

OR

Que.2 Answer according to instructions:

- (1) Write the biological functions fulfilled by Carbohydrates within living organisms.
- (2) Describe the process of protein denaturation and its impact on protein structure and function. Explain the various factors that can induce denaturation and provide examples of biological contexts where denaturation occurs.

Que.3 Answer according to instructions: (10)

- (1) Examine the structure and functional significance of fatty acids within biological systems.
- (2) Provide an overview of the general structure of pyrimidines, and detail the specific structures of thymine and cytosine

OR

Que.3 Answer according to instructions:

- (1) Define lipids and explore their structural classification into different classes.
- (2) Produce a comprehensive overview of nucleotide structure and functionality.

Que.4 Answer according to instructions: (10)

- (1) Define enzymes and illustrate their function through examples of oxidoreductases and transferases.
- (2) Describe the characteristics of the active site in enzymes.

Que.4 Answer according to instructions:

- (1) Compose a summary outlining the lock and key hypothesis concerning the mechanism of enzyme action.
- (2) Distinguish between: competitive and noncompetitive enzyme inhibition.

Que.5 Answer according to instructions: (10)

- (1) Present the laws of thermodynamics and elucidate the concept of redox reactions.
- (2) Explore the structure and roles of triglycerides within biological systems.

OR

Que.5 Answer according to instructions:

- (1) Give definitions of holoenzyme, apoenzyme, cofactors, coenzymes, and prosthetic groups
- (2) Define RNA and elaborate on the structural characteristics of transfer RNA (tRNA)
