

2403001302010001
EXAMINATION FEBRUARY-MARCH 2024
BACHELOR OF SCIENCE (SECOND SEMESTER)
(NEP) BIO.TECH
MAJOR : BIOCHEMISTRY OF WATER – LEVEL 1

[Time: As Per Schedule]

[Max. Marks: 35]

Instructions:

1. Fill up strictly the following details on your answer book

- a. Name of the Examination : **BACHELOR OF SCIENCE (SECOND SEMESTER) (NEP) BIO.TECH**
- b. Name of the Subject : **MAJOR : BIOCHEMISTRY OF WATER – LEVEL 1**
- c. Subject Code No : **2403001302010001**

2. Sketch neat and labelled diagram wherever necessary.
3. Figures to the right indicate full marks of the question.
4. All questions are compulsory.

Seat No:

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Student's Signature

Q.1 Attempt the following questions (Any Five)

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- a) What is the significance of water's high specific heat capacity in regulating temperature within living organisms?
- b) Enlist chemical properties of water that make it essential for life.
- c) Why are phosphate buffers important in biological systems?
- d) How does temperature affect the ionization of water?
- e) How does water's transparency to visible light benefit aquatic photosynthetic organisms?
- f) How does water's cohesion and surface tension support the existence of small organisms like water striders and certain aquatic plants?

Q.2 Attempt the following questions (Any Two)

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- a) Why is water considered a polar molecule? How does its polarity influence its interactions with other substances?
- b) How has the development of aerobic respiration impacted the biochemical diversity of life on Earth?
- c) How do hydrophobic interactions contribute to the structure of biological membranes?

Q.3 Explain in detail (Any Two)

10

- a) Explain how proteins contribute to the buffering capacity of biological systems?
- b) How does the dissociation of water molecules influence the acidity and basicity of aqueous solutions?
- c) Discuss the importance of pH regulation in biological systems and the consequences of pH imbalances.

Q.4 Explain in detail (Any Two)

10

- a) How does water's ability to form hydrogen bonds contribute to its role as a universal solvent and the fitness of aquatic environments for living organisms?
- b) How does water contribute to the process of protein folding. Why is proper protein folding crucial for biological function?
- c) How does water's transparency to visible light contribute to the fitness of aquatic environments for living organisms?
