

2403001302010001
EXAMINATION SEPTEMBER 2024 (ATKT EXAM)
BACHELOR OF SCIENCE (BIOTECHNOLOGY) SEM-2
BT- MJ -201 : BIOCHEMISTRY OF WATER

[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 (BIOTECHNOLOGY) SEM-2**
 - b. Name of the Subject: **BT- MJ -201: BIOCHEMISTRY OF WATER**
 - 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) How does the unique structure of water contribute to its role as the "universal solvent" in biological systems?
- b) What role do weak interactions play in maintaining the stability of biological macromolecules in aqueous environments?
- c) What is the equilibrium expression for the ionization of water?
- d) How do weak acids differ from strong acids in terms of ionization?
- e) How does water participate as a reactant in hydrolysis reactions?
- f) In cellular respiration, how does water participate as a reactant in the electron transport chain?

Q.2 Attempt the following questions (Any Two)

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- a) Write down significance of water in context of biochemistry.
- b) How evolution of life on Earth influenced biochemical processes?
- a) How do weak interactions contribute to the behavior of molecules in aqueous environments?

Q.3 Explain in detail (Any Two)

10

- a) What is the significance of the ionization of water in biological systems?
- b) Explain the concept of buffering in the context of biological systems and why it is necessary.
- c) Describe the autoionization of water and its equilibrium expression.

Q.4 Explain in detail (Any Two)

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- a) How does water serve as a reactant in biological systems beyond mere solvent roles?
- b) Why are the thermal properties of water crucial for the fitness of the aqueous environment for living organisms?
- c) Explain the role of water in ATP hydrolysis and its significance in cellular processes.
