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B.Sc. (HONS) BOTANY
I SEMESTER EXAMINATION DECEMBER 2025

Paper Name: **Biomolecules**Paper Code: **BBOMIC101**Time: **2½ hours**Maximum Marks: **60**

Note: This paper has 3 sections A, B, and C.

Section A: Answer all the questions. **Section B:** Attempt any 5 out of 6.**Section C:** Attempt any 2 out of 3.**Instructions:** An equal representation of each course outcome should be done in each section.

Abbreviations used:

CO-Course Outcomes

CLO 1: understand the molecular and chemical foundations of life and appreciate the role of water in biological systems (understand);**CLO 2:** comprehend the structure, function and acid base properties of amino acids (understand);**CLO 3:** analyze the structure, properties and roles of carbohydrates, lipids and nucleic acids (analyze);**CLO 4:** recognize the importance of vitamins in biological systems (understand); and**CLO 5:** identify and differentiate between various biomolecules in the laboratory (analyze).**BTL-Bloom's Taxonomy Levels**

1- Remembering, 2-Understanding, 3-Applying, 4-Analyzing, 5-Evaluating, 6-Creating

SECTION A

Very Short Type Question (15 questions)

15 x 1 = 15 marks

Q.No.	Questions	Marks	CO	BTL
1	What is the preferred substrate for the cellular respiration?	1	1	1,2
2	Which amino acid is considered the most flexible?	1	1	1,2
3	Name an aromatic amino acid?	1	1	1
4	Which transporter proteins are responsible for water uptake in plants?	1	1	1,3
5	Name one reducing sugar	1	1	1
6	What are lipids?	1	1	1,2
7	Name one nucleotide that acts as an energy source.	1	1	2
8	Name a disease caused by vitamin C deficiency.	1	1	1,3
9	What is meant by "lipids as signals"?	1	1	1,2
10	Define zwitterion.	1	1	1
11	Which carbon determines D/L configuration?	1	1	1
12	What is the function of rRNA?	1	1	1
13	What is hypervitaminosis?	1	1	1,2
14	Name a coenzyme containing nucleotides.	1	1	1
15	Define isoelectric point.	1	1	1,3

Please turn over

SECTION B

Short Type Question. (Attempt any five out of six)

5 x 5 = 25 marks

Q.No.	Question	Marks	CO	BTL
1	Classify amino acids based on polarity.	5	1	1
2	Explain mutarotation and discuss its significance in carbohydrate behavior in solution.	5	1	1,3
3	Discuss the physicochemical properties of DNA.	5	1	1,3
4	Describe the structure and functions of mRNA, rRNA, and tRNA.	5	1	1
5	What are gangliosides and lipopolysaccharides? Discuss their significance.	5	1	1,2
6	What are buffers? Explain their mechanism of behavior and importance in biological systems.	5	1	1,3

SECTION C

Long type Question (Attempt any two out of three)

2 x 10 = 20 marks

Q.No.	Question	Marks	CO	BTL
1	Explain the Watson and Crick model of DNA and its physicochemical properties.	10	1	1
2	Explain weak interactions in aqueous systems and discuss their importance in biomolecular structure.	10	1	1,3
3	What are anomers, epimers, and enantiomers? Describe with suitable examples.	10	1	1,2

END OF QUESTION PAPER