

Your Roll No: _____

**Department of Botany
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**B.Sc. (HONS. WITH RESEARCH) / B.Sc. (HONS) BOTANY
I SEMESTER EXAMINATION JANUARY 2025**

Paper Name: **Biomolecules**

Paper Code: **BBO-MIC101**

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 4 out of 5.

Section C: Attempt any 2 out of 3.

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 Questions (Attempt ALL questions)

(15 x 1=15 Marks)

Q. No	Questions	Marks	CO	BTL
1.	Give examples of aromatic amino acids?	1	2	1
2.	Name two sulphur containing amino acids?	1	2	1
3.	H-O-H bond angle in water is?	1	1	1
4.	What are amphiphilic molecules? Give an example?	1	1, 3	1, 2
5.	One of the commonly used acid-base indicators is?	1	1	1
6.	Which amino acid possesses a secondary amino group?	1	2	1

Please turn over

7.	How do you define “amphoteric molecules”?	1	2	2
8.	What is isoelectric point?	1	2	2
9.	What are enantiomers?	1	3	1
10.	What is meant by anomeric carbon?	1	3	1
11.	Give an example of biologically important sugar derivative?	1	3	1
12.	Which method of DNA sequencing is known as ‘dideoxy method’ or ‘chain terminator method’?	1	3	1
13.	‘Osteomalacia’ is caused by the deficiency of which vitamin?	1	4	1
14.	Give an example of essential fatty acid?	1	3	1
15.	Define iodine number?	1	3	1

SECTION B

Short-type Questions (Attempt ANY Four out of five)

(4 x 5=20 Marks)

Q. No	Questions	Marks	CO	BTL
1.	Highlight some of the properties of aqueous solutions profound for biological systems.	5	1	4
2.	Based on the polarity of the side chains, classify the standard amino acids?	5	2	3
3.	Give structural details of plant steroids and highlight their role as signalling molecules.	5	3	3
4.	What are structural differences between nucleotides and nucleosides?	5	3	2
5.	Write a short note on structure and function of membrane lipids?	5	3	3

SECTION C

Long type Questions (Attempt any TWO out of three)

(2 x 12.5=25 Marks)

Q. No	Questions	Marks	CO	BTL
1.	Write a detailed account of chemical structure of nucleic acids (DNA and RNA). What is the significance of Chargaff’s rule in governing base composition of DNA?	12.5	3	4, 5
2.	Give a detailed account of vitamins, their classification, active forms, deficiency disorders and symptoms?	12.5	4	4
3.	a). What are the common classes of lipids? Explain the physical properties, structural features and functions of biological lipids. b). What are the types and role of lipids in biological membranes	6.5 6	3 3	4 5

*****END OF QUESTION PAPER*****