BBCCT-101

ASSIGNMENT BOOKLET

Bachelor's Degree Programme
B.Sc. Hons in Biochemistry (BSCBCH) & Bachelor of Science (Biochemistry, BSCFBC)

MOLECULES OF LIFE

Valid from January, 2026 to Dec, 2026

School of Sciences
Indira Gandhi National Open University
Maidan Garhi
New Delhi-110068.

Dear Student,

Please read the section on assignments in the Programme Guide for Core Courses that we sent you after your enrolment. A weightage of 30 per cent, as you are aware, has been earmarked for continuous evaluation, **which would consist of one tutor-marked assignment** for this course. The assignment is in this booklet, and it consists of three parts, Part A, B and C. The total marks of all the parts are 100, of which 35% are needed to pass it.

Instructions for Formatting Your Assignments

Before attempting the assignment please read the following instructions carefully:

1) On top of the first page of your answer sheet, please write the details exactly in the following format:

ROLL NO.: ……

NAME: ……

ADDRESS: ……

……

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COURSE CODE: …….

COURSE TITLE: …….

ASSIGNMENT NO.: ……..…

STUDY CENTRE: ……..….. **DATE:** …….……...

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

2) Use only foolscap size writing paper (but not of very thin variety) for writing your answers.

3) Leave 4 cm margin on the left, top and bottom of your answer sheet.

4) Your answers should be precise.

5) Complete each of Part A, Part B and Part C of this assignment separately, and **submit them together.**

6) The assignment answer sheets are to be submitted to your Study Centre as per the schedule made by the study centre. **Answer sheets received after the due date shall not be accepted.**

   We strongly suggest that you retain a copy of your answer sheets.

7) This assignment is **valid from 1st January, 2026 to 31st Dec, 2026** and submit it as per the instructions given in the Programme Guide.

8) **You cannot fill the exam form for this course** till you have submitted this assignment.

We wish you good luck.

ASSIGNMENT
MOLECULES OF LIFE

Course Code: BBCCT-101
Assignment Code: BBCCT-101/TMA/2026
Maximum Marks: 100

Answer **all the questions** given below. All Questions carry equal marks.

1.	A)	Describe the origin of biochemistry and explain why it is considered an interdisciplinary discipline.	5
	B)	Explain how knowledge of chemical elements and units of measurement is essential for quantitative analysis in biochemical experiments.	5
2.	A)	Explain the unique properties of water and the role of non-covalent interactions in aqueous systems.	5
	B)	Using the Henderson–Hasselbalch equation, explain how buffers maintain physiological pH in biological systems.	5
3.	A)	Describe the general structure of α-amino acids and classify them based on their side chains.	5
	B)	Explain how the physical and chemical properties of amino acids influence protein structure and function	5
4.	A)	Describe peptide bond formation and the levels of protein structure.	5
	B)	Explain how alterations in protein secondary or tertiary structure can lead to loss of biological activity.	5
5.	A)	Describe the structure and classification of monosaccharides, including aldoses and ketoses.	5
	B)	Explain the biological significance of mutarotation, anomers, epimers, and enantiomers.	5
6.	A)	Explain glycosidic bond formation and differentiate between reducing and non-reducing disaccharides.	5
	B)	Discuss the role of oligosaccharides in cell recognition and molecular signaling.	5
7.	A)	Classify polysaccharides and describe the structure of storage and structural polysaccharides.	5
	B)	Describe the biochemical basis of blood group antigens and their importance in blood transfusion.	5
8.	A)	Classify lipids and describe the structure of fatty acids and triacylglycerols.	5
	B)	Explain how membrane lipid composition influences membrane fluidity and cellular function.	5
9.	A)	Describe the role of lipids as signaling molecules, cofactors, and pigments.	5
	B)	Classify vitamins into water-soluble and fat-soluble vitamins and describe their active forms.	5
10.	A)	Describe the structure of DNA according to the Watson–Crick model and outline the major types of RNA.	5
	B)	Explain the role of nucleotides as energy carriers, components of coenzymes, and second messengers in cells.	5