

BCHET-149

ASSIGNMENT BOOKLET

**Bachelor's Degree Programme
(BSCG)**

MOLECULES OF LIFE

Valid from January 1st 2025 to December 31st 2025



**School of Sciences
Indira Gandhi National Open University
Maidan Garhi, New Delhi-110068
(2025)**

Dear Student,

Please read the section on assignments in the Programme Guide for B.Sc. that was sent to you after your enrolment. A weightage of 30 per cent, as you are aware, has been earmarked for continuous evaluation which is done through one tutor-marked assignment (TMA) for this course. The assignment covers all the four blocks, and consists of two parts, Part-A and Part-B carrying a total of 100 marks. You are required to get 35% marks to pass.

Instructions for Formatting Your Assignment

Before attempting the assignments, 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 :

.....

.....

COURSE CODE :

COURSE TITLE :

ASSIGNMENT NO.:

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

(NAME AND CODE)

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. Solve Part-A and Part-B of this assignment, and submit the complete assignment answer sheets within the due date.
6. The assignment answer sheets are to be submitted to your Study Centre within the due date.
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, 2025 to 31st December, 2025. If you have failed in this assignment or failed to submit it by 31st December, 2025, then you need to get the assignment for the year 2026, and submit it as per the instructions given in the Programme Guide.
8. You cannot fill the examination form for this course until you have submitted this assignment.

We wish you Good Luck.

ASSIGNMENT
Molecules of Life
Elective Course in Chemistry

Course Code: BCHET-149
Assignment Code: BCHET/TMA/2025
Maximum Marks: 100

Answer all the questions given below.

Part-A

1. a) Describe the biochemical composition of a living organism (5)
b) Explain the structure and functions of mitochondria. (5)
2. a) Why do monosaccharides form cyclic structure? Draw the structures of open chain and cyclic forms of glucose. (5)
b) Taking D-glucose as an example explain the term mutarotation. (5)
3. a) What is the principal structural difference between amylose and cellulose? Explain giving structures. (5)
b) What is the difference between a fat and a fatty acid? Give definition of iodine number. (5)
4. a) Describe the structural differences between a triacylglycerol and a phospholipid. Give one example in each case. (5)
b) What are the similarities in composition amongst the four DNA nucleotides. (5)
5. a) Describe the isoelectric point. With the help of an example explain the utility of this property of amino acids and how is it useful in maintaining pH in human systems. (5)
b) How are the peptides named? Write the structure of a tripeptide of your choice and write its full and abbreviated name. (5)

Part-B

6. a) What is meant by active site of an enzyme? How do the binding groups and catalytic groups of an active site differ from each other? (5)
b) What is the basic principle involved in the mechanism of enzyme action in biological reactions? Explain. (5)
7. a) What is the significance of oxidative phosphorylation? Illustrate with the help of two examples. (5)
b) How is the enzyme, pyruvate dehydrogenase complex different from other enzymes? How does it function in the conversion of pyruvate to acetyl-CoA? (5)
8. a) What are the similarities between DNA replication and RNA transcription? (5)
b) Describe the factors that affect the immune response. (5)
9. a) Describe the interrelationship amongst the metabolic pathways. (5)
b) Write the steps of the degradation of amino acids and give a diagrammatic representation. (5)
10. a) Describe the energetic of the degradation of fatty acids. (5)
b) Explain the mechanism of drug action. (5)