

**BCHET-149**

**ASSIGNMENT BOOKLET**

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

**MOLECULES OF LIFE**

**Valid from January 1<sup>st</sup> 2024 to December 31<sup>st</sup> 2024**



**School of Sciences  
Indira Gandhi National Open University  
Maidan Garhi, New Delhi-110068  
(2024)**

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:

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**ROLL NO.:** .....

**NAME :** .....

**ADDRESS :** .....

.....

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**COURSE CODE** : .....

**COURSE TITLE** : .....

**ASSIGNMENT NO.:** .....

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

**(NAME AND CODE)**

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**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, 2024 to 31st December, 2024. If you have failed in this assignment or failed to submit it by 31st December, 2024, then you need to get the assignment for the year 2025, 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/2024  
Maximum Marks: 100

**Answer all the questions given below**

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**Part-A**

1. a) Differentiate between a prokaryotic and a eukaryotic cell in terms of their structure. (2)
- b) How are lysosomes formed in the cells. Describe their role within the cell. (3)
2. a) What do capital letters D and L signify in the context stereochemistry of monosaccharides? Explain with the help of an example. (2)
- b) Write a reaction that is used in distinguishing an aldose from a ketose. How does an aldose react with phenylhydrazine? Give the reaction involved and explain. (3)
3. a) What is milk sugar? How is it formed? Explain giving the reaction. (2)
- b) How are amino acids represented? Explain with the help of an example. Describe in brief the configuration of amino acids. (3)
4. a) Describe the behaviour of amino acids in acidic and basic medium. What is the significance of their Zwitterionic Nature? (2)
- b) How is peptide bond formed? Explain the stereochemistry of a peptide bond. (3)
5. a) Describe in brief the Merrifield solid phase synthesis of peptides. (2)
- b) Describe the covalent interactions involved in protein folding. (3)

**Part-B**

6. a) Explain the physiological aspect of specificity of enzyme action that distinguishes it from the non-enzyme part in a catalyst. (2)
- b) What is Michaelis-Menton equation? Describe its significance in affecting the rate of an enzymatic reaction. (3)
7. a) Describe the structural and functional basis of classification of lipids. (2)
- b) What are phospholipids? Describe in brief the different classes of phospholipids. (3)
8. a) Differentiate between nucleosides and nucleotides and illustrate your answer. (2)
- b) Name and describe the experiment which proved that 'DNA is the material that communicates the genetic information'. (3)

9. a) What are coupling reactions? Explain their significance in biochemical reactions. (2)
- b) Write the mechanism of conversion of G-3-P into pyruvate. (3)
10. a) What is substrate channelling in Kreb's cycle? Explain. (2)
- b) Compare the degradation and the biosynthesis of fatty acids. (3)