

**MCH-015**

**ASSIGNMENT BOOKLET**

**M.Sc. in Chemistry Programme  
(MSCCHEM)**

**BIOLOGY FOR CHEMISTS**

**(Valid from January, 2024 to December, 2024)**

**It is compulsory to submit the assignment before filling in  
the examination form.**



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

Dear Learner,

Please read the section on assignments in the Programme Guide for M.Sc. in Chemistry 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 covers both the blocks of the course. The total marks of all the parts are 100, of which 40% 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:

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**ENROLMENT NO.** : .....

**NAME** : .....

**ADDRESS** : .....  
.....  
.....

**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 paper (but not of very thin variety) for writing your answers.
- 3) Leave about 4 cm margin on the left, top and bottom of your assignment response sheet.
- 4) Your answers should be precise.
- 5) 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 1<sup>st</sup> January, 2024 to 31<sup>st</sup> December, 2024. If you have failed in this assignment or fail to submit it by 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 the assignment.

Wishing you good luck

# Tutor Marked Assignment

## BIOLOGY FOR CHEMISTS (MCH-015)

Course Code: MCH-015  
Assignment Code: MCH-015/TMA/2024  
Maximum Marks: 100

**Note: Attempt all questions. The marks for each question are indicated against it.**

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1. a) What is meant by domains of life? Describe in brief the different domains of life. (5)  
b) Compare and contrast the cellular organisation in prokaryotes and eukaryotes. (5)
2. a) Describe the method of separating the subcellular organelles. Illustrate your answer. (5)  
b) Define pH and buffer. How are the two related? Name the two important biological buffers in the human body. (5)
3. a) Draw and explain the open chain and ring structures of monosaccharides taking a suitable example. (5)  
b) Describe the structure and classification of fatty acids giving examples. (5)
4. a) What are zwitterions? Explain taking an amino acid as the example. How does a zwitterion relate to the isoelectric point of an amino acid? (5)  
b) Differentiate between a nucleotide and nucleoside giving their structures. (5)
5. a) Describe the structural basis for the role of ATP as the energy carrier in biological systems. Write the reaction involved. (5)  
b) What are coupling reactions? Explain their significance in the biological systems. (5)
6. a) Differentiate between glycolysis and gluconeogenesis writing the reactions in which these two differ from each other. (5)  
b) Describe the central role of TCA cycle in the metabolism of biomolecules in a living system. (5)
7. a) Name the three stages of catabolism of amino acids and give a schematic representation of the same. (5)  
b) Describe the fate of uric acid during the degeneration of purine nucleotides. (5)
8. a) What is meant by immunity? Enumerate the different levels of defense in the body. (5)  
b) Differentiate between an antigen and an antibody. Describe and illustrate the structure of an antibody. (5)
9. a) Describe any one experiment which proved that 'DNA is the genetic material'. (5)  
b) Explain the process of DNA replication. Illustrate your answer. (5)
10. a) Describe the structure and role of ribosomes in protein biosynthesis. (5)  
b) Describe the oxidative degradation of acyl-CoA during the degradation of fatty acids. (5)