

MBC-001

ASSIGNMENT BOOKLET

**Master Degree Programme
M.Sc in Biochemistry (MSCBCH)**

CONCEPTS OF BIOCHEMISTRY

Valid from January, 2024 to Dec, 2024



**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 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:

.....

.....

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) 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.

- 6) This assignment is **valid from 1st January, 2024 to 31st Dec, 2024** and submit it as per the instructions given in the Programme Guide.
- 7) **You cannot fill the exam form for this course** till you have submitted this assignment.

We wish you good luck.

ASSIGNMENT
CONCEPTS OF BIOCHEMISTRY

Course Code: MBC-001
Assignment Code: MBC-001/TMA/2024
Maximum Marks: 100

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

1. A) Describe the significance of water as a universal solvent.
B) Define the term reducing sugars. Explain the structural difference between *aldo* and *keto* sugars with suitable examples. (5+5) 10
2. Give a detailed comparative account on Chitin and Cellulose. 10
3. Describe the four levels of protein structure. Explain how the structure of a protein determines its function using hemoglobin as an example. (5+5) 10
4. Discuss the structural diversity of glycans and their biological roles. Explain their biosynthesis with relevant examples. (5+5) 10
5. Write a detailed note on biologically important sugar derivatives with suitable examples and draw their structures. 10
6. Discuss the composition of biological membranes. How do the different types of lipids contribute to membrane structure and function? Illustrate your answer with examples of specific lipids and their roles in cellular processes. (5+5) 10
7. Describe the main classes of lipids and their structural characteristics. Provide detailed examples for each class, including their biological significance. (5+5) 10
8. Write the principles and applications of at least three different protein purification techniques. Compare and contrast their effectiveness for different types of protein samples. Include in your discussion: ion-exchange chromatography, size-exclusion chromatography, and affinity chromatography. (10)
9. A) Describe DNA super coiling.
B) Give a detailed account on nucleic acid sequencing. (5+5) 10
10. Discuss the role of vitamins as coenzymes in metabolic reactions. Choose three vitamins and describe their biochemical roles and deficiency symptoms. (5+5) 10

Note: Draw the figures/flowcharts/tables wherever required.