MBC-002

ASSIGNMENT BOOKLET

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

CELL AND MOLECULAR BIOLOGY

Valid from 1st January, 2026 to 31st December, 2026

School of Sciences
Indira Gandhi National Open University
Maidan Garhi, New Delhi-110068
(2026)

Dear learners,

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 Tutor Marked Assignments (TMA)

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:

You may reproduce the Course Code and Assignment Code from the assignment.

ENROLMENT NO.:

PROGRAMME TITLE	**: .....**	**NAME: .....**
COURSE CODE	**: .....**	**ADDRESS:.....**
		.....
COURSE TITLE	**: .....**	**.....**
ASSIGNMENT CODE	**: .....**	**SIGNATURE:.....**
STUDY CENTRE	**: .....**	**DATE: .....**

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

2. Use only foolscap size paper for your response and tie all the pages carefully. Avoid using very thin paper. Allow a 4 cm margin on the left and at least 4 lines in between each answer. This would facilitate the evaluator to write useful comments in the margin at appropriate places.
3. Write the responses in your own handwriting. Do not print or type the answers. Do not copy your answers from the Units/Blocks sent to you by the University. It is advised to write your answers in your own words as it will help in grasping the study material.
4. Do not copy from the response sheets of other students. If copying is noticed, the assignment will be rejected.
5. Write each assignment separately. All the assignments should not be written in continuity.
6. Write the question number with each answer.

7. **The completed assignment should be submitted within the due date** to the Coordinator of the Study Centre allotted to you. TMAs submitted at any other place and after due date will not be evaluated.
8. After submitting the TMA, get the acknowledgement from the Coordinator on the prescribed assignment remittance-cum-acknowledgement card. **We strongly suggest that you retain a copy of your answer sheets.**
9. In case you have requested for a change of Study Centre, you should submit your TMA only to the original Study Centre until the change of Study Centre is notified by the University.
10. This assignment is **valid from 1st January, 2026 to 31st December, 2026**. If you have failed in this assignment or fail to submit it by Dec, 2027, then you need to get the assignment for the year 2026, and submit it as per the instructions given in the Programme Guide.
11. **You cannot fill the examination form for this course** until you have submitted this assignment.

We wish you good luck.

ASSIGNMENT

Cell and Molecular Biology

Course Code: **MBC-002**
Assignment code: **MBC-002/TMA/2026**
Maximum marks: **100**

Note: Attempt all the questions. Write the answers in your own words; do not copy from the course material. Draw the figures/flowcharts/tables wherever required.

1. a) Define the following terms: [1x**5=5]**
   i) Apoptosis
   ii) Plasmodesmata
   iii) Crossing-over
   iv) 30nm fiber

   b) Explain the structure and function of peroxisomes. **[5]**

2. Describe the components of extracellular matrix. [10**]**

3. a) Explain how do chromosomes behave during the mitosis. **[5]**

   b) Write an overview on signaling molecules. **[5]**

4. Discuss the following: **[5+5=10]**
   a) C- value paradox
   b) Chromosome banding patterns

5. a) Explain the role of DNA double helix in DNA protein complex. **[5]**

   b) Compare the prokaryotic DNA replication and eukaryotic DNA replication. **[5]**

6. Discuss: **[5+5=10]**
   a) Basic transcription unit
   b) RNA splicing

7. a) Briefly discuss the basic features of the genetic code . **[5]**

   b) Distinguish between prokaryotic translations and eukaryotic translation. **[5]**

8. a) Mention the inherited disorders of DNA repair pathways. **[5]**

   b) Write a detailed note on the Tryptophan operon. **[5]**

9. Write a short note on the following: [5+5=10]
   a) Modification in DNA and Hisntones
   b) Hot spot Mutation

10. Explain the following: **[5+5=10]**
    a) Dynamic behavior of microtubules
    b) Structural maintenance of chromosomes