

ASSIGNMENT BOOKLET

**B.Sc. (Hons.) Biochemistry (BSCBCH) / B.Sc. (Major) Biochemistry
(BSCFBC)**

CELL BIOLOGY

Valid from 1st January, 2026 to 30st December, 2026

Last date for the assignment submission is on or before 31st December, 2026



**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 of B.Sc. (Hons.) Biochemistry (BSCBCH) or B.Sc. (Major) Biochemistry (BSCFBC) that we sent you after you enrolment. A weightage of 30 percent, as you are aware, has been earmarked for continuous evaluation, **which would consist of one tutor-marked assignment** for this course. The assignment in this booklet covers all blocks of the course. The total marks of all the parts are 100, of which 35% are needed to pass it.

SPECIFIC INSTRUCTIONS FOR TUTOR MARKED ASSIGNMENTS (TMA)

- 1) Write your Enrolment Number, Name, Full Address, Signature and Date on the top right hand corner of the first page of your response sheet.
- 2) Write the Programme Title, Course Code, Course Title, Assignment Code and Name of your Study Centre on the left hand corner of the first page of your response sheet.

Course Code and Assignment Code may be reproduced from the assignment.

The top of the first page of your response sheet should look like this:

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.

- Use only foolscap size writing paper (but not of very thin variety) for writing your answers.
- Leave 4 cm margin on the left, top and bottom of your answer sheet.
- Your answers should be precise.

- Solve questions of the assignment, and submit the complete assignment answer sheets within the due date.
- 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.
- **This assignment is valid from 1st January, 2026 to 31th December, 2026. If you have failed in this assignment or fail to submit it by December, 2026, then you need to get the assignment for the year 2027,** and submit it as per the instructions given in the Programme Guide.
- You cannot fill the exam form for this course till you have submitted this assignment.

We wish you good luck!

Assignment Cell Biology

Course Code: **BBCCT-103**
Assignment code: **BBCCT-103/TMA/2026**
Maximum marks: **100**

Note: Attempt all questions.

1. (a) Describe any two types of extremophiles and the environmental conditions they inhabit. (5)
(b) What are experimental models? Give any two examples along with their specific features. (5)
2. (a) Describe the ultrastructure of a typical plant cell with the help of a labeled diagram. (5)
(b) Compare transmission electron microscopy and light microscopy. (5)
3. (a) Explain the principle and applications of confocal microscopy. (5)
(b) Discuss the importance of fixation and staining techniques in cell biology. (5)
4. (a) Explain the steps involved in subcellular fractionation. (5)
(b) Describe the structure and functions of chloroplast. (5)
5. Write short notes on the following: (5+5)
(a) Plasmodesmata
(b) Microtubules
6. Explain the signal hypothesis. Outline the common characteristics of signal sequences involved in protein targeting. (10)
7. (a) Differentiate between O-glycosylation and N-glycosylation. (5)
(b) Explain the Ran GTP/GDP Cycle. (5)
8. Describe the protein transport pathways into the thylakoid lumen with a neat labeled diagram. (10)
9. (a) Discuss the different sub-phases of prophase I in Meiosis. (5)
(b) Explain the role of cyclins and cyclin-dependent kinases in regulation of cell cycle. (5)
10. Describe **any two** of the following: (5+5)
(a) Major players in Apoptosis
(b) Necrosis
(c) Fluorescence-Activated Cell Sorting (FACS)