

MBCE-017

ASSIGNMENT BOOKLET

M.Sc. in BIOCHEMISTRY (MSCBCH)

OMICS

Valid from 1st July, 2025 to 30th June, 2026

Last date for the assignment submission is on or before 30th June, 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) that we sent you after your 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 is in this booklet, and it consists of two parts, Part A and B. It 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.

- 3) Use only foolscap size writing paper (but not of very thin variety) for writing your answers.

- 4) Leave 4 cm margin on the left, top and bottom of your answer sheet.
- 5) Your answers should be precise.
- 6) Solve questions of the assignment, and submit the complete assignment answer sheets within the due date.
- 7) 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.
- 8) We strongly suggest that you retain a copy of your answer sheets.
- 9) **This assignment is valid by 30th June, 2026.** If you have failed in this assignment or fail to submit it by 30th June, 2026, then you need to get the assignment for the year 2026-27, and submit it as per the instructions given in the Programme Guide.
- 10) You cannot fill the exam form for this course till you have submitted this assignment.

We wish you good luck!

**Assignment
OMICS**

Course Code: **MBCE-017**
Assignment code: **MBCE-017/TMA/2025-26**
Maximum marks: **100**

Note: Attempt all questions.

PART-(A)

1. (a) Write briefly the aim and different branch of omics. [5]
(b) Explain the Gene Annotation and its importance [5]
2. (a) Discuss Illumina Sequencing. [5]
(b) Describe the molecular phylogeny. [5]
3. (a) What are regulatory RNAs. [5]
(b) With the help of diagram, explain the adapter trimming. [5]
4. Describe the steps involved in DNA microarray in details. [10]
5. Write short notes on any two of the following: [5x2=10]
 - a) *Saccharomyces cerevisiae* as an experimental genomic model
 - b) Computational prediction of MiRNA target genes
 - c) National Center for Biotechnology Information (NCBI)

PART-(B)

6. Describe the protein-protein interactions in proteomics. [10]
7. (a) Explain the principle and applications of the Two-Dimensional (2D) Gel Electrophoresis. [5]
(b) What is Homology modeling? Discuss briefly any one tool used in homology modelling. [5]
8. (a) Define metabolomics and discuss its different types. [5]
(b) Differentiate between Mass spectrometry and Nuclear Magnetic Resonance (NMR). [5]
9. (a) Compare the Structure-Based Drug Design (SBDD) Ligand-Based Drug Design (LBDD). [5]
(b) Enlist the basic steps of Molecular Docking. [5]
10. Write short notes on any two of the following: [5+5=10]
 - a) MetaboAnalyst 5.0
 - b) Metabolic Network
 - c) RCSB Protein Data Bank (PDB)