

M. SC. (BIOCHEMISTRY)

(MSCBCH)

Term-End Examination

June, 2026

MBC-007 : BIOINFORMATICS AND

BIostatISTICS

Time : 3 Hours

Maximum Marks : 100

Note : (i) Answer any **five** questions.

(ii) All questions carry equal marks.

1. (a) Describe the important applications of bioinformatics with examples. 10
- (b) How sequence similarity, identity and homology are different from each other ? 10
2. (a) What are biological databases ? Discuss the advantages of these databases. 10

- (b) Give a comparative account of various scoring matrices used in bioinformatics. 10
3. (a) Illustrate different phylogenetic tree building methods with examples. 10
- (b) Explain the correlation between secondary structure of protein with its biological functions. 10
4. (a) Compare and contrast the bottom-up and top-down approaches in the structure identification in systems biology. 10
- (b) Describe any *two* simulation analysis methods used in systems biology. 10
5. (a) Discuss the stochastic modelling method used in studying genetic networks. 10
- (b) Write an overview on generative models and their importance. 10

6. (a) Enlist and elaborate different data collection methods along with the precautions to be followed in data collection. 10
- (b) Define the terms 'Mean' and 'Mode'. 4
- (c) A primary hospital data shows 100 people have cancer, of which 40 are women. What is the probability that a person with cancer is a women ? 6
7. Write notes on any *two* of the following : 2×10=20
- (a) Probability sampling
- (b) Hypothesis testing
- (c) Sampling distributions

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