

Exam. Code : 206603

Subject Code : 4620

M.Sc. (Bio-Informatics) Semester—III

ADVANCED ALGORITHMS FOR
COMPUTATIONAL BIOLOGY

Paper — BI-632

Time Allowed—3 Hours]

[Maximum Marks—75

SECTION—A

Section A is compulsory.

1. Explain the following in not more than 4 lines :

- (a) Complexity theory
- (b) Data types
- (c) Double Digest Problem
- (d) Border block groups
- (e) HMM
- (f) Clone libraries
- (g) SVM
- (h) Genetic algorithm
- (i) Back propagation
- (j) Rosetta stone.

10×1.5=15

SECTION—B

Answer **one** question from each unit.

UNIT—I

2. What do you understand by abstract data types ? Explain their significance in algorithm designing. 12
3. Illuminate the concepts and principles of algorithm designing. Describe various techniques of algorithm designing. 12

UNIT—II

4. What do you understand by integer programming ? Write a note on circular maps an map algorithm. 12
5. Illuminate various optimization techniques. 12

UNIT—III

6. Describe the role played by HMM in identification and recognition of motifs in protein. 12
7. Outline the process of cloning and generation of clone libraries. Compare and contrast the libraries of complete and partial digestion. 12

UNIT—IV

8. Outline significance and applications of support vector machines in computational biology. 12
9. What are various machine learning techniques ? Explain how machine learning is useful in computational biological sciences. 12

UNIT—V

10. Explain genetic algorithms and their benefits in bioinformatics. 12
11. Write a note on :
- (a) Docking simulation
 - (b) Microarray data analysis. 6+6=12