7. (a) Explain the concept of scoring matrices for aligning amino acid sequences. How PAM is derived ?

(b) How fractal analysis is performed ? Discuss with example.

Unit-IV

8. (a) Explain various statistical techniques adopted in analysis of microarray technologies.

(b) How scientific data is evaluated ? Discuss various evaluation models.

9. (a) Discuss the concept of image analysis for data extraction.

(b) What is the use of normalization and filtering in microarray analysis ?

Roll No. : .....

Total No. of Questions : 9] [Total No. of Pages : 4

67109-N

MCA 3rd Semester (Regular) Examination, February-2022

(MCA 2 Years Programme)

(w.e.f. 2020-21)

Paper-21MCA23DB3

BIOINFORMATICS COMPUTING ELECTIVE II(iii)

Time : Three Hours] *[Maximum Marks : 80*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note – Attempt *five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) Differentiate between local and global alignment.

(b) List *two* biological sequence formats with suitable example.

(c) How structural genomics is different from functional genomics ?

(d) What is Sequence Alignment ? Name different types of sequence alignment.

(e) What is the difference between profile and motif ?

(f) What is Pattern Matching ? Name some applications of pattern matching.

(g) What is the purpose of cost matrix ?

(h) Discuss the use of segmentation and gridding in microarray analysis.

Unit–I

2. (a) Discuss the importance of biological database in bioinformatics.

(b) What is Domain ? How domain is identified in protein structure ? Discuss the significance of identifying domain.

3. (a) Discuss the significance of neural network in bioinformatics. Illustrate with example.

(b) How biological data integration system works ? Explain.

Unit–II

4. (a) How Hidden Markov model framework can be applied for gene prediction problem ?

(b) What is Molecular Dynamics ? How molecular modeling can be done with molecular dynamics.

5. (a) Outline the level of organization of protein structure.

(b) What is Probability ? How probabilistic modeling is used in bioinformatics ?

Unit–III

6. (a) How motif can be recognized and detected ? Discuss different strategies for motif detection.

(b) Discuss various DNA walk models based on dimensions.