Roll No. ....   Total Pages : 4

CMDE/M-20   **6959**

BIOINFORMATICS

Paper–BT-203

Time : Three Hours]   [Maximum Marks : 80

Note : Attempt *five* questions in all, selecting *one* question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. Give full forms of following Abbreviations :

   (a) NCBI.

   (b) BLAST.

   (c) SRS.

   (d) PSSM.

   (e) HMM.

   (f) Phylo Con.

   (g) PDB.

   (h) UPGMA.

   (i) SMART.

   (j) ORF.

   (k) TIGR.

(l) LGT.

(m) MALDI.

(n) STRING.

(o) NIH.

(p) PIR. (1×16=16)

UNIT–I

2. (a) Define Bioinformatics. 5

(b) Role of Bioinformatics in current scenario of COVID-19. 5

(c) Define :

(i) Gap penalty.

(ii) Scoring matrices.

(iii) Global alignment. (2×3=6)

3. (a) What are Biological databases ? 1

(b) Short notes on following :

(i) Profiles.

(ii) Domains.

(iii) Fasta Format.

(iv) Sequence Logos.

(v) Multiple Sequence Alignment. (5×3=15)

UNIT–II

4. (a) Write short note on Gene Prediction using various Hidden Markov Models. 5

   (b) Schematic representation of various elements in Bacterial Promoter. 6

   (c) Diagramatically explain how finding a true tree is difficult ? 5

5. Write short notes on following :

   (a) Molecular Fossils. 4

   (b) Cladogram *vs* Phylogram. 6

   (c) Jukes Cantor model *vs* Kimura. Model. 6

UNIT–III

6. Write short notes on following :

   (a) PDB Format. 6

   (b) Protein Structure Visualization. 6

   (c) Intermolecular method of Protein Structure Comparison. 4

7. (a) Protein Structure Prediction by Chou-Fasman method. 5

   (b) Role of Ramachandran plot in Protein Secondary Structure Prediction. 6

   (c) Mention only subheading steps of Homology modelling in tertiary Protein Structure Prediction. 5

UNIT–IV

8. Write short note on following :

    (a) Genomics.   4

    (b) Gene Ontology.   3

    (c) Genome Sequencing.   6

    (d) SAGE.   3

9. (a) Define Proteomics.   4

    (b) Various techniques applied in Proteomics.   6

    (c) How Proteomics is considered better than Genomics.

          6

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