

CBCS SCHEME

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18BT63

Sixth Semester B.E. Degree Examination, June/July 2023 Bioinformatics

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- a. Define Database. Explain the classification of Bioinformatics database with examples. (10 Marks)
- b. Discuss the structure of GenBank Flat file format with an illustration. (10 Marks)

OR

- a. Differentiate between PAM and BLOSUM matrix. Mention its types. (10 Marks)
- b. Discuss any two methods of performing Multiple Sequence Alignment. (10 Marks)

Module-2

- a. Construct a Phylogenetic tree using UPGMA method for the given distance matrix. Calculate the branch length for all the branches.

	A	B	C	D	E
A	0				
B	17	0			
C	21	30	0		
D	31	34	28	0	
E	23	21	39	43	0

- b. Interpret Bootstrap Tree Evaluation method. (10 Marks)

OR

- a. Outline the utility of EST database in sequencing. (10 Marks)
- b. Give the importance of SNP's and discuss how bioinformatics aids in detection of SNP's. (10 Marks)

Module-3

- a. Describe the utility of ORF finder and GENSCAN tools towards detecting functional sites in genome. (10 Marks)
- b. Describe the various tools used for predicting Codon usage bias. (10 Marks)

OR

- a. Discuss the predictive methods available for predicting the secondary structure of proteins. (10 Marks)
- b. Describe the bioinformatics tools used for predicting the protein identity based on composition. (10 Marks)

Module-4

- a. Describe the 3D structure prediction of unknown protein by Homology modeling. (10 Marks)
- b. Explain the concept of Energy Minimization based on force field calculation. (10 Marks)

OR

- 8 a. Explain the approaches of molecular superposition and the need for structural superposition of proteins. (10 Marks)
- b. Explain the various forms of Graphical representation of peptides. Add a note on RasMol and SPDB viewer. (10 Marks)

Module-5

- 9 a. Discuss Primer design parameters and add a note on software's used for the purpose. (10 Marks)
- b. Outline any two software tools used for Restriction Mapping. (10 Marks)

OR

- 10 a. What are Pharmacophoric patterns? Explain how they are derived. (10 Marks)
- b. Outline briefly about :
- i) the concept of QSAR ii) Receptor Mapping. (10 Marks)
