USN | | | | | | | | | | |

15BT54

Fifth Semester B.E. Degree Examination, June/July 2018
Bioinformatics

Time: 3 hrs.

Max. Marks: 80

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

Module-1

1 a. Describe the Primary databases. Explain the file format of GenBank flat files. **(08 Marks)**
  b. Discuss the relevance of TIGR and Sanger databases toward various genomic studies. **(08 Marks)**

OR

2 a. What are Substitution matrices? Illustrate various amino acid substitution matrices used in sequence analysis. **(08 Marks)**
  b. Describe the process of multiple sequence analysis and add a note on the pattern determination by Multiple sequence alignment. **(08 Marks)**

Module-2

3 a. Illustrate the structural component of a phylogenetic tree. Add a short note on various types of phylogram. **(08 Marks)**
  b. Discuss the process involved in gene prediction. Elaborate in detail various Bioinformatics approaches and tools used for the prediction of genes. **(08 Marks)**

OR

4 a. Explain various steps involved in phylogenetic data analysis. Add a note on various tree building methods. **(08 Marks)**
  b. Elaborate in detail the Bioinformatics approaches and tools used for the secondary structure prediction of protein. **(08 Marks)**

Module-3

5 a. Critically discuss the steps involved in dideoxy method of sequencing. Summarise the role of Bioinformatics tools and software's. **(08 Marks)**
  b. Elaborate the various approaches and tools in machine learning. **(08 Marks)**

OR

6 a. Describe the relevance of ESTs and SNPs in genome Bioinformatics. **(08 Marks)**
  b. Elaborate in detail the role of Bioinformatics tools in microarray data analysis. **(08 Marks)**

Module-4

7 a. Critically discuss the steps in comparative modeling. Extend a note on various Bioinformatics tools involved in the refinement and validation of such models. **(08 Marks)**
  b. Inspect the scope and application of various molecular visualization tools available for public domain. **(08 Marks)**

OR

8 a. Outline the process in basic MD algorithm. Summarise the scope and limitations. **(08 Marks)**
  b. Write relevant note on :
  i) Rotameric structures of proteins   ii) Energy minimization. **(08 Marks)**

Module-5

9 a. Examine the need, scope and guidelines for insilico primer design. Extend a note on various computational biology tools used for primer design. **(08 Marks)**

b. Discuss various types of molecular docking and explain how the calculation of molecular properties carried out during docking studies. **(08 Marks)**

OR

10 a. Discuss the process of restriction mapping and apply the relevance of computational biology tools and software's for restriction mapping. **(08 Marks)**

b. Write critically note on :
   i) QSAR   ii) Pharmacophore pattern. **(08 Marks)**

* * * * *