



(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 154410**

Roll No.

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## B. Tech.

(SEM. IV) THEORY EXAMINATION, 2014-15  
BIOINFORMATICS - I

Time : 3 Hours]

[Total Marks : 100

**Note :** Attempt all questions.

1 Attempt any two parts of the following : **10×2=20**

- (a) Differentiate between primary and secondary biological databases? Explain the methodology of data curation in PROSITE with example.
- (b) What are SNPs? Describe the databases linked to SNPs. How are they useful in the field of health care?
- (c) Write short notes on:
  - (i) SRS
  - (ii) BLOCK

- 2 Briefly describe the sequencing methods of any two : **10x2=20**
- (a) DNA
  - (b) RNA
  - (c) Protein
- 3 Attempt any two parts of the following: **10x2=20**
- (a) What are local and global sequence alignments?  
Discuss their significances citing examples.
  - (b) What do you mean by database similarity search?  
Give the algorithmic detail of BLAST along with their limitations.
  - (c) Write short note on :
    - (i) PAM
    - (ii) BLOSUM
- 4 Attempt any two parts of the following : **10x2=20**
- (a) Explain the characteristics of protein secondary structural elements. Mention the tools available for prediction and their benchmarks.
  - (b) Define the various levels of protein structures.  
Explain the homology modeling of protein structure.
  - (c) Write short notes on :
    - (i) ORF prediction
    - (ii) Profile search.

5 Attempt any two parts of the following : **10x2=20**

- (a) What do you mean by protein structure visualization? Mention the tools available along with their specific features.
- (b) Write short note on:
  - (i) RASMOL
  - (ii) DALI
- (c) Describe the rational approach for drug designing with suitable examples.

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