

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

PAPER ID : 2127

Roll No.

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B. Tech
(SEMESTER-V) THEORY EXAMINATION, 2012-13
BIO-INFORMATICS – II

Time : 2 Hours]

[Total Marks : 50

Section – A

Note : Attend **all** questions :

10 × 2 = 20

1. (a) What are the key inference problems in biology ?
- (b) Discuss Network and IP address.
- (c) What is document clustering ?
- (d) Discuss cross validation.
- (e) Applications of Microarray.
- (f) What is high throughput data ?
- (g) Explain Support Vector Machine (SVM).
- (h) Describe the simulated annealing approach for the structure identification.
- (i) What is genetic algorithm ?
- (j) List the tools available for the data submission.

Section – B

Note : Attempt any **three** parts :

3 × 5 = 15

2. (a) Write the minimum three tools available for the following :
 - (i) Secondary Structure Prediction
 - (ii) Visualization
- (b) What is the role of artificial neural network in bioinformatics ?
- (c). What do you understand by machine learning ? And what is the relation between machine learning and statistics ?
- (d) What is drug ? Describe the process of drug designing.
- (e) Describe the genetic algorithm and E/M algorithm in detail.

Section – C

Note : Attend **all** questions :

5 × 3 = 15

3. Explain the different types of Hidden Markov Model and its application in bioinformatics.
4. Explain the clustering approach. Mention the k-means and hierarchical clustering.
5. What is the role of Ramachandran plot in bioinformatics ? List the different softwares available for it.

OR

What do you understand by simulated annealing ? Explain in details.

6. What is a microarray ? Give the different stages of microarray analysis.

OR

Describe Protein Structure Prediction. Give the method for Tertiary Structure Prediction.

7. What are the main data types and common file format for representing the nucleic acid and protein sequences ? Explain any two file format.

OR

What are the major computational simulation techniques with reference to differential equation stimulators, parameter estimates and sensitivity analysis ?
