USN | | | | | | | | | | 15BT54

Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Bioinformatics

Time: 3 hrs.   Max. Marks: 80

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

Module-1

1   Give a short account on :
   a.   OMIM.
   b.   PDB flat file.
   c.   SCOP.
   d.   BLOSUM.   **(16 Marks)**

OR

2   a.   Explain about the algorithm behind CLUSTALW.   **(08 Marks)**
   b.   Comment on : i) PSI – BLAST   ii) PROSITE.   **(08 Marks)**

Module-2

3   a.   Explain in detail the distance based tree building methods.   **(12 Marks)**
   b.   Calculate the maximum number of rooted and unrooted trees that can be constructed with 5 taxa A, B, C, D, E.   **(04 Marks)**

OR

4   a.   Diagramatically explain the functional sites in a eukaryotic DNA and explain a tool for prediction of eukaryotic genes.   **(08 Marks)**
   b.   Write about the tools available for predicting secondary structural elements in proteins.   **(08 Marks)**

Module-3

5   a.   Write the method and principle behind Sanger's sequencing method.   **(08 Marks)**
   b.   Given a raw genome sequence data, write about the different analysis that can be carried out with it.   **(08 Marks)**

OR

6   a.   Brief on SNPs and their importance.   **(08 Marks)**
   b.   Write about comparative genomics and the different themes involved.   **(08 Marks)**

Module-4

7   a.   Give a account on :
     i) Force fields in MM   ii) Energy minimization of a biological system.   **(12 Marks)**
   b.   What is the need for structural super position of proteins?   **(04 Marks)**

OR

8   a.   Comment on : i) Rotamer libraries   ii) Rasmol   iii) Canonical DNA form.   **(12 Marks)**
   b.   Brief about the different graphical representation of a protein.   **(04 Marks)**

Module-5

9 a. Construct restriction map on a plasmid for restriction enzymes Eco RI and HindIII. The following are the fragments got by their digestion : Eco RI – 7 Kb and 3Kb, Hind III – 7 Kb and 3 Kb and dual digestion of EcoRI + HindIII – 3 Kb and 2 Kb.

(04 Marks)

b. Comment on i) Vector NTI   ii) REBASE. (06 Marks)

c. What are Primers? Discuss the criteria to be considered while designing the primers.

(06 Marks)

OR

10 a. Brief on bioactive conformation of ligands and method to derive them. (04 Marks)

b. Comment on QSAR. (06 Marks)

c. What are Pharmacophoric patterns? Write about its significance and derivation methods.

(06 Marks)

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