Enrollment No._____

Shree Manibhai Virani and Smt. Navalben Virani Science College (Autonomous), Rajkot

Affiliated to Saurashtra University, Rajkot

SEMESTER END EXAMINATION APRIL -2019

B.Sc. Biotechnology

16UBTCC25 - BIOINFORMATICS

Duration of Exam – 3 hrs ***Semester – VI*** ***Max. Marks – 70***

Part A (10X1= 10 marks)

Answer **ALL** questions

1. What were the goals of the Human Genome Project?
2. Differentiate the terms: Sequence similarity, identity and homology.
3. Expand the following abbreviation: EMBL, PDB, NCBI, DDBJ.
4. How Tr EMBL database differ from EMBL database.
5. Differentiate Global alignment and local alignment.
6. Explain the utility of scoring/substitution matrix in the sequence alignment.
7. Draw a labelled diagram of phylogenetic tree.
8. Write the basic use of molecular phylogeny?
9. List the 4 factors that affect PCR primer designing.
10. What is a model organism? Give examples.

Part B (5x5= 25 marks)

Answer **ALL** questions

11a. What were the ethical, legal, and social implications addressed by the Human Genome Project?

OR

11b. Give the important features and utility of ExPASy.

12a. What are databases? Explain its types and importance.

OR

12b. Explain SWISS PROT database with its important characteristics.

13a. How sequence alignment is useful in detection of insertions, deletions and substitutions in the sequence?

OR

13b. Describe BLAST tool and its types.

14a. What are the main steps of a molecular phylogenetic analysis?

OR

14b. Briefly explain the method used to judge the reliability of the branches in a tree.

15a. Define comparative genomics. Discuss its goals and benefits.

OR

15b. PCR has revolutionized molecular biology. List and explain the 3 major advantages and 3 major disadvantages that the technique of PCR.

***Part C** (5x7= 35 marks)*

Answer **ALL** questions

16a. Enlist and explain significance of major databases at NCBI.

OR

16b. What is bioinformatics? Explain its scope and significance in life science research.

17a. Discuss primary, secondary and composite databases in detail with example.

OR

17b. Write a note on Literature Databases.

18a. Elaborate any one tool on Multiple Sequence Alignment.

OR

18b. Give the important features of Dynamics Programming algorithm. Explain Needleman Wunch algorithm in detail.

19a. Explain basic concepts of molecular evolution and systematics. How have species' distributions changed over time?

OR

19b. Elaborate Clustering algorithm? How distance method can be used for tree construction. Explain with an example.

20a. Define functional genomics? Discuss any one technique in detail to study expression of gene.

OR

20b. Define Polymerase Chain Reaction (PCR). Briefly discuss Real time PCR and Multiplex PCR.