K22U 3640

Reg. No. : .....

Name : .....

Third Semester B.Sc. Degree (CBCSS – OBE – Regular/Supplementary/ Improvement) Examination, November 2022
(2019 Admission Onwards)
GENERAL AWARENESS COURSE IN MICROBIOLOGY
3A12MCB : Bioinformatics and Bioinstrumentation

Time : 3 Hours

Max. Marks : 40

PART – A

Answer **all** questions. **Each** carries **1** mark.

1. Differentiate between SwissProt and TrEMBL.
2. What do you mean by a primary database ? Give examples.
3. Give an account of FASTA sequence format.
4. What are the applications of bioinformatics in agriculture ?
5. Enlist the ingredients required for a PCR experiment.
6. What is the basic principle behind spectrophotometry ?

PART – B

Answer **any 6** questions. **Each** carries **2** marks.

7. Enlist the major differences between PAM and BLOSUM matrices.
8. Protein Data Bank is considered as a major resource for a bioinformatician. Why ?
9. What are the applications of chromatography in biology ?
10. What is a phylogenetic tree ? Enlist main features of the same.

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11. Give out the major principle behind Electrophoresis.
12. Give an account of the absorption spectra of proteins and nucleic acids.
13. Differentiate between structural and functional genomics.
14. What are the differences between paper and thin-layer chromatography ?

PART – C

Answer **any 4** questions. **Each** carries **3** marks.

15. How biological databases are classified based on type of data ?
16. What is BLAST ? Enlist the different types of BLAST programs available in NCBI.
17. Give an account of the major concepts in molecular modelling.
18. Outline the steps involved in PCR amplification.
19. What is differential centrifugation ? Enlist its applications.
20. What are dot matrices ? Graphically represent a Dotplot comparing two sequences.

PART – D

Answer **any 2** questions. **Each** carries **5** marks.

21. Sequence alignment forms an integral part of biological research. Write an essay on the concepts and tools used in the same.
22. Discuss the molecular biology techniques employed for the separation and analysis of biomolecules.
23. Write short descriptions about the following.
    a) Applications of bioinformatics in drug design
    b) Nucleotide databases
    c) Beer Lambert's Law
    d) Computational Proteomics.
24. Discuss the nature and types of biological data and its trends. Also give an account of the major biological databases.
