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Reg. No. : .....

Name : .....

Fourth Semester M.Sc. Degree Examination, March 2021

Botany

BO 241 : BIOINFORMATICS AND BIOPHYSICS

(2019 Admission)

Time : 3 Hours Max. Marks : 75

I. Answer the following questions.

1. Expand EMBL and DDBJ.
2. What do bootstrap values indicate?
3. What is multiple sequence alignment?
4. What is SNP?
5. Define transcriptome.
6. What is Smith Waterman algorithm?
7. Comment on Phylip.
8. What are the factors that determine the electrophoretic mobility of a particle?
9. Differentiate between resolution and resolving power of the microscope.
10. Which are the factors that determine the sedimentation of a component during centrifugation?

(10 × 1 = 10 Marks)

P.T.O.

II. Answer the following questions in not more than **50** words.

11. (a) What is the difference between rooted and unrooted phylogenetic tree?

OR

(b) What is ORF? What is its significance in functional genomics?

12. (a) Explain the use of GENSCAN.

OR

(b) Explain the assumptions in molecular clock hypothesis.

13. (a) Write a brief explanation on KEGG.

OR

(b) Comment on SWISS-PROT database.

14. (a) Explain the unique features and advantages of confocal microscopy.

OR

(b) What is Cerenkov radiation? What is its use in biology?

15. (a) Expand and explain GISH.

OR

(b) Expand and explain ELISA.

(5 × 2 = 10 Marks)

III. Answer the following questions in not more than **150** words.

16. (a) Briefly explain the three primary methods of pairwise alignment of sequences.

OR

(b) Write a brief account on protein visualization tool, Rasmol.

17. (a) Give the advantage and disadvantage of shotgun sequencing method.

OR

(b) What are microarrays? Explain how microarrays can be used for gene expression studies

18. (a) What is BLAST? Give two applications where you could use BLAST.

OR

(b) What is pharmacogenomics? What does it aim at?

19. (a) What is GenBank used for?

OR

(b) Write a brief account on CLUSTAL programs.

20. (a) Briefly explain comparative genomics and its significance in evolutionary studies.

OR

(b) Write an account of concept, methods and practical approaches of CADD.

21. (a) Explain the procedure, working and applications of PFGE.

OR

(b) Explain the principle and applications of SDS-PAGE.

22. (a) Describe the procedure and applications of FISH.

OR

(b) Enumerate the important non-covalent bonds that stabilize biomolecules.

(7 × 5 = 35 Marks)

IV. Answer the following questions in not more than **250** words.

23. (a) Describe the various methods used for the annotation of genome sequence.

OR

(b) Write an account on proteomics. Add a note on methods of separation and identification of cellular proteins.

24. (a) Explain the specimen preparation for transmission electron microscopy.

OR

(b) Explain the principle and applications of chromatography. Add a note on different types of chromatography.

(2 × 10 = 20 Marks)
