

(6 pages)

Reg. No. : .....

Code No. : 20443 E      Sub. Code : AEMI 53

B.Sc. (CBCS) DEGREE EXAMINATION,  
APRIL 2023.

Fifth Semester

Microbiology

Major Elective II — BIOINFORMATICS

(For those who joined in July 2020 onwards)

Time : Three hours      Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL the questions.

Choose the correct answer :

1. For long distance communication which of the following data transfer technique is used?
  - (a) Serial transfer
  - (b) Parallel transfer
  - (c) Serial parallel transfer
  - (d) Parallel serial transfer

2. In genetic algorithm, in the mutation process \_\_\_\_\_.
  - (a) sequence is changed
  - (b) gaps are not rearranged
  - (c) sequence is not changed
  - (d) gaps are not inserted
3. Which one of the following is not one of the requirements for implementing algorithms for sequence database searching?
  - (a) Speed
  - (b) Size of the dataset
  - (c) Sensitivity
  - (d) Specificity
4. In FASTA, for a Z score > 15, the match can be considered extremely \_\_\_\_\_ with \_\_\_\_\_ of a homologous relationship.
  - (a) Insignificant, uncertainty
  - (b) Significant, uncertainty
  - (c) Significant, certainty
  - (d) Insignificant, certainty

5. Which of the following is incorrect statement about branch-and-bound?
- (a) It uses a shortcut to find an MP tree
  - (b) It establishes an upper limit for the number of allowed sequence variations
  - (c) It solely uses UPGMA method
  - (d) It starts by building a distance tree for all taxa involved
6. \_\_\_\_\_ wobble pairs may be produced in these double stranded regions.
- (a) A/A
  - (b) A/U
  - (c) G/C
  - (d) G/U
7. Name the phenomenon which shows the lack of correlation in genome size and genetic complexity \_\_\_\_\_
- (a) Histogram
  - (b) Karyogram
  - (c) Dendrogram
  - (d) C-value paradox
8. Which mass analyzer is most frequently used in MALDI?
- (a) Magnetic sector
  - (b) Quadruple
  - (c) Iron trap
  - (d) TOF

9. The structure formed by joining the aminoacids by a peptide bond is called \_\_\_\_\_ structure of a protein.
- (a) Quaternary
  - (b) Tertiary
  - (c) Primary
  - (d) Secondary
10. \_\_\_\_\_ is used as a reducing agent in SDS PAGE.
- (a) Sodium Dodecyl Sulfate (SDS)
  - (b) Ammonium Per Sulphate (APS)
  - (c) Bisacrylamide
  - (d) 2-mercaptoethanol

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Write a short note on RDBMS.
- Or
- (b) Comment on relational databases.
12. (a) Describe about Biological databases.
- Or
- (b) Give a short notes on Gene banks.

13. (a) Explain in detail of Sequence Alignment.

Or

(b) Write a note on scoring matrices.

14. (a) Discuss about MALDI-TOF spectrometry.

Or

(b) Give a notes on 2-D gel electrophoresis.

15. (a) Explain about structure of proteins.

Or

(b) Describe in detail of Drug discovery and Design.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Give a detailed note on Data transfer methods with illustration.

Or

(b) What are the advantages of encrypted data transfer?

Page 5 Code No. : 20443 E

17. (a) Discuss in detail of FASTA.

Or

(b) Explain in detail about DDBJ.

18. (a) Describe about sequence alignment methods.

Or

(b) Write a detailed note on phylogenetic trees.

19. (a) Give an account on Prokaryotic genome organization with illustration.

Or

(b) What is Transcriptome and explain the process of transcription.

20. (a) Comment on protein motifs.

Or

(b) Explain in detail of Homology modelling technique.

Page 6 Code No. : 20443 E