

Code No. : 5547

Sub. Code : ZMBM 31

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

Third Semester

Microbiology – Core

BIOINFORMATICS AND BIostatISTICS

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. An example of an 'internet search engine' is
- Windows
 - Yahoo
 - LINUX
 - MS Word

2. Literature Database include
- Medline and PubMed
 - PubMed and PDB
 - Medline and PDB
 - Medline and PDS
3. Which of the following does not describe local alignment algorithm?
- In trace back step, beginning is with the highest score, it ends when 0 is encountered
 - First row and first column are set to 0 in initialization step
 - Score can be negative
 - Negative score is set to
4. Short gun cloning differs from the clone-by-clone method in which of the following ways?
- The location of the clone being sequenced is known relative to other clones within the genomic library in shotgun cloning
 - Genetic markers are used to identify clones in shotgun cloning
 - Computer software assembles the clones in the clone-by-clone method
 - No genetic or physical maps of the genome are needed to begin shotgun cloning.

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5. Ubiquitin is a small protein that may be affixed to certain protein substrates by enzymes called E3 ubiquitin ligases.
- TRUE
 - FALSE
 - Can be true or false
 - Cannot say
6. Proteomics refers to the study of _____.
- Set of proteins in a specific region of the cell
 - Biomolecules
 - Set of proteins
 - The entire set of expressed proteins in the cell
7. From the following, select Speed based problem
- Arithmetic mean
 - Geometric mean
 - Harmonic mean
 - None of the above
8. For the data 12, 13, 54, 56, 25 determine the types of Kurtosis mine from the following
- Mesocratic distribution
 - Platykurtic distribution
 - Leptokurtic distribution
 - None of the above

9. What is the mean of a Chi Square distribution with 6 degrees of freedom?
- 4
 - 6
 - 8
 - 12
10. In ANOVA with 4 groups and a total sample size of 44, the computed F statistic is 2.33 In this case, the p-value is:
- greater than 0.05
 - exactly 0.05
 - cannot tell – it depends on what the SSE is
 - less than 0.05

PART B — (5 × 5 = 25 marks)

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

11. (a) Write short notes on PubMed.
- Or
- (b) Differentiate Linux and Unix with suitable examples.
12. (a) Explain pairwise alignment briefly.
- Or
- (b) Elaborate the methods of Phylogenetic alignment.

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[P.T.O.]

13. (a) Discuss the concept of ab – initio protein folding.

Or

- (b) Explain the methods used in structural analysis of Protein.

14. (a) Calculate Mean from the following grouped data.

Class :	20-25	25-30	30-35	35-40	40-45	45-50
Frequency :	110	170	80	45	40	35

Or

- (b) Define Skewness and Kurtosis and write a difference between Skewness and Kurtosis.

15. (a) Categorize the Students Test and write a formula of T – test.

Or

- (b) Define ANOVA and discuss the techniques of ANOVA.

PART C — (5 × 8 = 40 marks)

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

16. (a) List the Basic Computer Components. Explain in detail.

Or

- (b) What is OS? And Explain types of OS and features of it.

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17. (a) Organize the sequence alignment and explain the types of algorithms used for sequence alignment.

Or

- (b) Apply BLAST and Classify the various types of BLAST with flow chart demonstration.

18. (a) Decipher the Protein Database and explicate the types and Importance.

Or

- (b) Compare the different Computation methods of 3-D Protein Structure Modeling and Explain Computation Strategy for Homology Based 3-D Protein Structure Modeling.

19. (a) Justify Mean, Mode, Median and Write about Measures of Central Tendency.

Or

- (b) Evaluate the Measures of Dispersion and it's types.

20. (a) What is Chi-square Test? Categorize the Types and Formula of Chi-square test.

Or

- (b) Compare and contrast Correlation and Regression and add note on its significance.

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