

(6 Pages)

Reg. No. :

Code No. : 6453

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M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2021

Third Semester

MICROBIOLOGY — CORE

BIOINFORMATICS AND BIOSTATISTICS

(For those who joined in July 2017 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answers :

1. _____ concentrates on the aspects of bioinformatics dealing with drug discovery.
 - (a) Pharmacoinformatics
 - (b) Functional genomics
 - (c) Comparative genomics
 - (d) Pharmacogenetics

2. Linux kernel is distributed under _____
- (a) PPL (b) GPL
(c) APL (d) DPL
3. The _____ has created a compendium of profiles, allowing to find even distant homologues.
- (a) ISREC (b) ISREE
(c) ISREO (d) None
4. Which of the following is a sequence alignment tool provided by NCBI?
- (a) RASMOL (b) BLAST
(c) FASTA (d) Clustal W
5. Which of these is an advantage of difference in gel electrophoresis compared to gel free approaches?
- (a) More sensitive
(b) Intact proteins allow detection of changes in protein modification
(c) Allow a greater range of proteins to be analysed
(d) Proteins are identified as part of the quantification

6. Databases such as CATH and SCOP are used to identify _____
- (a) the structural family to which a protein belongs
 - (b) the genic family to which a protein belongs
 - (c) homologous protein
 - (d) analogous protein
7. _____ is a fundamental statistical indicator.
- (a) Mean
 - (b) Median
 - (c) Variance
 - (d) Standard deviation
8. If the standard deviation of a population is 9, the population variance is _____
- (a) 9
 - (b) 3
 - (c) 21
 - (d) 81
9. Test to be applied when number of observations are less than 30 and variance is not known, is said to be _____
- (a) z test
 - (b) T test
 - (c) F test
 - (d) chi square test
10. Output value generated in result of a chi-square distribution is _____
- (a) always negative
 - (b) always positive
 - (c) condition oriented
 - (d) always zero

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) What are PubMed articles? How do we access PubMed?

Or

- (b) What are the search engines in computer? Explain.

12. (a) Write a short notes on genome sequencing.

Or

- (b) Write a note on profile and motif.

13. (a) Explain about protein secondary structure prediction.

Or

- (b) Discuss about biochemical pathway databases.

14. (a) Write short notes on the following

- (i) arithmetic mean
(ii) harmonic mean.

Or

- (b) What is skewness in statistics with example?

15. (a) Discuss about normal distribution.

Or

(b) What is chi square in statistics?

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Write a detail notes on public biological databases.

Or

(b) Write an essay on world wide web.

17. (a) What is FASTA? How does FASTA algorithm work?

Or

(b) Write a detail notes on Gen bank.

18. (a) Discuss about protein data bank.

Or

(b) How will you predict 3D structure of a protein?

19. (a) Compare dispersion and kurtosis of a distribution.

Or

- (b) Distinguish between primary and secondary sources of data with suitable examples. Explain with suitable examples the sources and collection of primary and secondary data.

20. (a) A coin was tossed 100 times. Results were counted 65 heads and 35 tails were observed. Is this result a significant departure from the expected result?

Or

- (b) State and briefly explain with an example the addition and multiplication theorems of probability.
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