

(6 pages)

Reg. No. : .....

Code No. : 5455

Sub. Code : ZZOM 41

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

Fourth Semester

Zoology – Core

BIostatistics and Bioinformatics

(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. When several unbiased samples are drawn from the same population, the sampling technique is
  - (a) Random sampling
  - (b) Non-random sampling
  - (c) Non-probability sampling
  - (d) Purposive sampling

2. When data is classified according to the magnitude it is called
  - (a) Chronological data
  - (b) Qualitative data
  - (c) Quantitative data
  - (d) Continuous data
3. The most stable measure of central tendency is
  - (a) Mode
  - (b) Median
  - (c) Mean
  - (d) Harmonic mean
4. Mean deviation can be computed from
  - (a) Arithmetic mean
  - (b) Mode
  - (c) Median
  - (d) All of these
5. Binomial distribution was worked out by
  - (a) Blaise Pascal
  - (b) James Bernoulli
  - (c) Carl Gauss
  - (d) Laplace
6. What will be the probability of getting odd numbers if a dice is thrown?
  - (a)  $1/2$
  - (b) 2
  - (c)  $4/2$
  - (d)  $5/2$
7. Chi-square test is used to analyze
  - (a) Scores
  - (b) Ranks
  - (c) Frequencies
  - (d) Any of these
8. How is the significance of an ANOVA test determined?
  - (a) By calculating the chi-square test
  - (b) By calculating t test
  - (c) By calculating the F test
  - (d) By calculating the P value

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9. BLAST programme is used in
- (a) DNA sequencing
  - (b) Amino acid sequencing
  - (c) DNA bar coding
  - (d) Bioinformatics

10. SWISS-PROT is related to
- (a) Portable data
  - (b) Swiss bank data
  - (c) Sequence data bank
  - (d) Sequence data

PART B — (5 × 5 = 25 marks)

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

11. (a) Explain the methods of collection of primary data.

Or

- (b) Comment on Graphic presentation of data.

12. (a) The following data give the values of glucose (mg) in 100 ml blood of human beings.  
120, 119, 105, 88, 92, 125, 100, 105, 97, 95  
Calculate mean, median, and mode

Or

- (b) Write the merits and demerits of median.

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13. (a) Describe the properties of the normal distribution curve

Or

- (b) Write a note on null hypothesis.

14. (a) Explain the Mann-Whitney test.

Or

- (b) List out the uses of sign test.

15. (a) Give an account of SWISS-PROT sequence entry format.

Or

- (b) Write the salient features of DNA sequence analysis.

PART C — (5 × 8 = 40 marks)

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

16. (a) Discuss the types of random sampling methods.

Or

- (b) Elucidate the diagrammatic presentation of data.

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17. (a) Describe the measures of skewness.

Or

- (b) Find the coefficient of correlation between  $x$  and  $y$  from the following data:

X : 10 9 8 7 6 5 4 3 2 1  
Y : 6 7 8 4 9 2 1 5 10 3

18. (a) Discuss various steps in the procedure of testing the hypothesis.

Or

- (b) Elucidate the properties and applications of student  $t$ -test.

19. (a) Apply a one-way analysis of variance test to the following data and find out whether the variance in the growth rate (g/kg/months) of fish due to temperature is significant.

Temperature ( $^{\circ}\text{C}$ )			
20	25	30	35
10	12	15	16
12	12	14	19
13	14	15	20
14	15	16	17
15	16	17	18

Or

- (b) Describe Randomized block design.

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20. (a) Illustrate the applications of bioinformatics.

Or

- (b) Write an essay on protein sequence data bases.

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