Roll No:
Date: __/__/____

St. Claret College

Autonomous, Bengaluru

UG END SEMESTER EXAMINATION-DECEMBER 2024
BSC I SEMESTER
ST 124: DESCRIPTIVE STATISTICS

TIME: 3 hours. 9 **MAX. MARKS: 80**

This paper contains THREE printed pages and FOUR parts

Instructions:
1. **Verify and ensure that the question paper is completely printed.**
2. **Any discrepancies or questions about the exam paper must be reported to the COE within 1 hour after the examination.**
3. **Students must check the course title and course code before answering the questions.**

PART-A

Answer all the questions. Each answer carries ONE mark. **[1 x 10 = 10]**

1. Which of the following represents data?
   a. A single value b. Only two values in a set
   c. A group of values in a set d. All of the above
2. A frequency distribution can be
   a. Discrete b. Continuous
   c. Both (a) and (b) d. None of (a) and (b)
3. Graphs and Charts facilitate:
   a. Comparison of values b. To know the trend
   c. To know relationship d. All of the above
4. Mean is a measure of
   a. Location or Central value b. Dispersion
   c. Correlation d. None of the above
5. The average of the 7 number 7, 9, 12, x, 5, 4, 11 is 9. The missing x is:
   a. 13 b. 14 c. 15 d. 8
6. The idea of product moment correlation was given by
   a. R.A. Fisher b. Francis Galton c. Karl Pearson d. Spearman
7. The range of the simple correlation coefficient is
   a. 0 to ∞ b. -∞ to +∞ c. 0 to 1 d. -1 to +1

8. The variance-covariance matrix is used to represent which of the following?
   a. Relationships between variables b. Standard deviations of variables
   c. Mean values of variables d. Regression coefficients
9. Which of the following measures the strength of a linear relationship between three or more variables?
   a. Simple correlation coefficient b. Multiple correlation coefficient
   c. Partial correlation coefficient d. Spearman's correlation coefficient
10. Which of the following best describes a residual in a regression model?
   a. The difference between the predicted and actual values of the dependent variable
   b. The slope of the regression line
   c. The correlation between two independent variables
   d. The mean of the independent variable

PART-B

Answer any TEN questions. Each answer carries TWO marks. **[2 x 10 = 20]**

11. Define Statistics.
12. What do you mean by population and sample?
13. Define Sampling.
14. What do you mean by central tendency?
15. Write the formula for Arithmetic mean and Geometric mean.
16. What do you mean by moments?
17. Define Correlation
18. Write the formula for Spearman's rank correlation for the repeated ranks.
19. What is the principle of least squares?
20. What is a mean vector in multivariate data analysis?
21. Define multiple correlation.
22. Write the concept of residual.

PART-C

Answer any FOUR questions. Each answer carries FIVE marks. **[5 x 4 = 20]**

23. Explain the scales of measurement with an example.
24. Briefly explain the partition values with an example.
25. Explain the types of correlation between two variables with an example.
26. Using the method of least squares, estimate the parameters of a quadratic equation.
27. What is the Variance-Covariance matrix? Explain its significance in multivariate data analysis with an example.
28. State any two properties of residuals.

PART-D

Answer any THREE questions. Each answer carries TEN marks. **[10 x 3 = 30]**

29. a) Briefly explain the diagrammatic construction of a histogram.
    b) What are the different types of sampling? Explain. (5+5)
30. a) For any two positive numbers show that AM≥GM.
    b) Prove that Variance is not affected by change of origin but depends on scale. (4+6)
31. a) Establish the relationship between central moments and non-central moments.
    b) Explain the different types of Skewness and kurtosis. (5+5)
32. Derive the formula for the Karl Pearson's rank correlation coefficient.
33. Obtain the estimates of parameters of tri- variate linear regression equation.

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