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Reg. No. : .....

Name : .....

Second Semester B.Sc. Degree Examination, May 2020

First Degree Programme under CBCSS

Statistics

Foundation Course

ST 1221 – STATISTICAL METHODS II

(2018 Admission onwards)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions. Each question carries **1** mark.

1. What is meant by perfect correlation?

2. Define correlation ratio.

3. Define multiple correlation.

4. Write the standard error of correlation coefficient.

5. What is artificial neural network?

6. What is the application of nearest neighbour techniques?

7. How to find the product of two matrices using excel?

8. Write the suitable functions in excel to find the exponential and square root of a value.

9. What is the usage of # operator in R?

10. List any two data entry methods in R.

(10 × 1 = 10 Marks)

SECTION – B

Answer **any eight** questions. Each question carries **2** marks.

11. Describe scatter diagram. How to interpret it?

12. Karl Pearson's coefficient of correlation between X and Y is 0.6 and the slope of the regression line of X on Y is 0.45. Find the slope of the regression line of Y on X.

13. Derive the angle between two lines of regression.

14. Distinguish between correlation and partial correlation.

15. Write the principle of least squares.

16. What is meant by curve fitting?

17. What is OLAP?

18. Write the significance of clustering in data mining.

19. Write short note on data warehousing.

20. How to draw a pie chart in excel?

21. What are the mathematical operators in R?

22. How to fit a straight line R?

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions. Each question carries **4** marks.

23. Two hotels are ranked by 6 customers and ranks are given. Calculate rank correlation coefficient for the data.

Hotel A	1	2	3	4	5	6
Hotel B	1	5	3	6	4	2

24. Prove that correlation coefficient is not affected by the change of origin and scale of measurement.

25. If the regression lines are $y = 4 + 0.5x$ and $x = 2.5 + 0.6y$ find the means and the coefficient of correlation between x and y.

26. Fit a curve of the form $y = ae^{bx}$ to the given data.

x :	1	2	3	4	5	6
y :	3	5	9	15	24	40

27. Explain the least square method for fitting the curve $y = ax^b$.

28. Describe decision trees.

29. Explain logistic regression.

30. Describe the functions available in excel for statistical analysis.

31. Explain various logical operators in *R*.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions. Each question carries **15** marks.

32. (a) Calculate Pearson's coefficient of correlation from the following data.

x :	77	52	14	35	90	56	60
y :	35	40	45	40	35	34	38

(b) Derive Spearman's rank correlation coefficient formula.

33. The amount of money spends on advertisement by a company is believed have an effect on their gross sales. Data for the last 10 years is given. Fit a linear regression for the data and Compute the Coefficient of determination.

Advertisement amount (in Rs. 1,00,000)	2.8	3.2	3	4	2.6	3.8
Gross sales (in Rs. 10,00,000)	6	6.8	6.5	7.2	5.9	7
Advertisement amount (in Rs. 1,00,000)	3.4	3.2	4.7	5.2		
Gross sales (in Rs. 10,00,000)	5.8	6.8	9.05	9.5		

34. Describe data mining and its applications. Explain various tools used for data mining.

35. Explain classification problem. Discuss Bayesian classifiers.

(2 × 15 = 30 Marks)