25U267 (Pages: 2) Name : .....

Reg. No : .....

SECOND SEMESTER UG DEGREE EXAMINATION, APRIL 2026

(FYUGP)

(Regular/Supplementary/Improvement)

CC24UCSC2MN103 - FUNDAMENTALS OF SPSS AND R PROGRAMMING

(Computer Science - Minor Course)

(2024 Admission onwards)

Time: 2.0 Hours Maximum: 70 Marks

Credit: 4

Part A (Short answer questions)

Answer ***all*** questions. Each question carries 3 marks.

1. Describe how are rows and columns structured in the Data View of SPSS. [Level:2] [CO1]
2. Describe how to select cases in SPSS based on a specific condition. For example, how would you select only those cases where a variable exceeds a certain threshold [Level:2] [CO1]
3. Discuss the changes occur in the rows and columns of a dataset after using the 'Transpose' function in SPSS. [Level:2] [CO1]
4. Explain the steps to open an existing data file in SPSS. [Level:2] [CO1]
5. Explain the purpose of conducting a one sample t-test in SPSS. [Level:3] [CO2]
6. Demostrate how can you compute the standard deviation of a dataset using SPSS? Briefly explain the process. [Level:3] [CO2]
7. Differetiate eigen value and eigen vector in R. [Level:2] [CO3]
8. Explain how to use R to plot a line chart. [Level:2] [CO3]
9. Explain the main features of R programming that make it popular for statistical computing and data analysis. [Level:2] [CO3]
10. Describe the main advantages of using a two-way ANOVA over a one-way ANOVA. (Use R). [Level:2] [CO4]

(Ceiling: 24 Marks)

Part B (Paragraph questions/Problem)

Answer ***all*** questions. Each question carries 6 marks.

11.	Explain Boxplot and Scatterplot in SPSS.	[Level:2]	[CO1]
12.	Describe how to alter the column sizes and font styles in an SPSS output table. What procedures are involved in altering your table's appearance?	[Level:2]	[CO1]
13.	Explain the steps involved in conducting a Mann-Whitney U test. Provide an example scenario where this test would be appropriate and interpret the results.	[Level:3]	[]
14.	Compare and contrast the Kruskal-Wallis test and the Chi-Square test in terms of their applications, assumptions, and the type of data they analyze. (Use SPSS)	[Level:3]	[]
15.	Illustrate how does the merge() function differ from dplyr joins.	[Level:2]	[CO3]
16.	What are some common file formats that R can read and write when importing and exporting data?	[Level:2]	[CO3]
17.	Explain the steps involved in creating an X-bar chart and an R chart. Discuss the assumptions and conditions under which these charts are appropriate and provide an example scenario. (Use R)	[Level:2]	[CO4]
18.	Describe the concept of simple correlation and its significance in statistical analysis. Explain the steps involved in calculating the correlation coefficient and provide an example. (Use R)	[Level:2]	[CO4]

(Ceiling: 36 Marks)

Part C (Essay questions)

Answer any ***one*** question. The question carries 10 marks.

19.	Derive the formula for Pearson's correlation coefficient. Explain each term in the formula and discuss the significance of the correlation coefficient value.	[Level:3]	[CO2]
20.	Explain the purpose and procedure of testing for the overall significance of model coefficients and individual regression coefficients in a regression model using R. Discuss the assumptions and conditions under which these tests are appropriate. Provide detailed examples for both tests, including the formulation of hypotheses, calculation of test statistics, and interpretation of results. Compare the advantages and limitations of these tests and discuss scenarios where each test would be most suitable.	[Level:2]	[CO4]

(1 × 10 = 10 Marks)

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