III Semester M.B.A. (Day & Eve.) Examination, May/June 2025
(CBCS) (2022 – 23 and Onwards)
MANAGEMENT
Paper – 3.11.2 : Advanced Statistical Methods for Business Decision Making

Time : 3 Hours   Max. Marks : 70

SECTION – A

Answer **any five** questions carrying **five** marks **each**.   (5×5=25)

1. Differentiate between descriptive and inferential statistics with examples.

2. What are the different categories of data groupings, and why are they important in data analysis ?

3. Compare and contrast discrete and continuous probability distributions.

4. How is the Chi-Square distribution used in statistical analysis ? Provide an example.

5. Explain the differences between discriminant analysis and regression.

6. Define correlation analysis and explain its application in data science.

7. What is Structural Equation Modeling (SEM) and why is it used in research ?

SECTION – B

Answer **any three** questions carrying **ten** marks **each**.   (3×10=30)

8. Analyze the importance of sampling in statistical inference and discuss the key sampling techniques.

9. How can out-of-sample testing be used to assess prediction accuracy in regression models ?

10. Explain how biplots and graphical representation of principal components help in interpreting data structures.

11. Discuss the assumptions and estimation techniques involved in factor analysis.

P.T.O.

SECTION – C

12. Case Study.

Compulsory question. (1×15=15)

A retail company, TrendMart, is experiencing fluctuating sales across its various store locations. Management wants to understand the factors influencing sales performance and predict future trends. They collect data on customer demographics, seasonal demand, marketing spend and competitor pricing. Additionally, they want to assess the impact of their recent promotional campaigns. To make data-driven decisions, TrendMart's analysts must apply statistical techniques such as regression analysis, probability distributions and hypothesis testing. They aim to develop a predictive model that improves inventory management, optimizes pricing strategies, and enhances marketing effectiveness while ensuring data accuracy and reliability for decision-making.

a) Considering yourself to be the senior analyst of the company, explain how you will handle the above situation.

b) Develop 2-3 objectives and hypothesis for the same and tell how you will be analyzing it to draw meaningful and appropriate solution.

c) Mention all the statistical tools that you will be using to analyse the collected data.

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