CLASS: MBA   SEMESTER: IV
BRANCH: MBA   SESSION: SP/2023

SUBJECT: MT550 MULTIVARIATE DATA ANALYSIS

TIME: 3 Hours   FULL MARKS: 50

INSTRUCTIONS:
1. The paper contains five questions, each of 10 marks and 50 marks.
2. Attempt all questions. Notations, if any, are of usual meaning.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, ensure you have the correct question paper.
5. Tables/Data handbook/Graph paper to be supplied to candidates in the examination hall.

Q.1(a)   Define the Regression Model's Multivariate (mathematical) form with assumptions taken.   [5]
Q.1(b)   Take any problem from real life and show the efficacy of using the Regression model in   [5]
analyzing and making a better inference.

Q.2(a)   In a reputed AICTE-approved Institute, students were randomly assigned to one of two   [5]
subject teachers, Prof. X and Prof. Y. After the assignment, Prof. X had 15 students, and
Prof. Y had 12 students. Each class took the same standardized test at the end of the year.
Prof. X's students had an average test score of 78, with a Standard Deviation of 9, and Prof.
Y's students had an average test score of 85, with a Standard Deviation of 10.
Test the hypothesis that Prof. X and Prof. Y are equally effective teachers.
(Use a 0.10 level of significance; the tabulated (critical) value is = +/- 1.708)
Q.2(b)   Explain a business situation where Factor Analysis is the best-suited approach.   [5]

Q.3   Discuss (any TWO) the suitability of using the following methods for Multivariate Analysis: [5+5=10]
          a. Discriminant Analysis
          b. Cluster Analysis
          c. Principal Component Analysis

Q.4(a)   Mr Praveen, business manager of Blue Star Ltd., wants to test the lifetime of three ACs of   [5]
each of the four brands. Data shown below, each representing the average lifetime of an
AC, measured in lakhs of the hour.

A	B	C	D
20	25	24	23
19	23	20	20
21	21	22	20

As a business manager of consumer research, Mr Praveen wants to test and compare the
lifetime of four brands of AC. Use ANOVA analysis to test whether the average lifetime of
different brands of ACs is equal or not.
(Given, Tabulated value of F at 3, 8 degrees of freedom) is 4.07; and
        The level of Significance (LOS) is 5%.)
Q.4(b)   Define MANOVA and explain how this differs from ANOVA, preferably with a real-life   [5]
situation.

Q.5(a)   Define Structural Equation Modelling (SEM) used for Multivariate Analysis.   [5]
Q.5(b)   How does SEM differ from prototype multivariate methods? Explain this with a suitable   [5]
example.