

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

CLASS: MBA
BRANCH: MANAGEMENT

SEMESTER: III
SESSION: MO/2024

SUBJECT: MT550 MULTIVARIATE DATA ANALYSIS

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

		CO	BL
Q.1(a)	Briefly explain a) Serial Correlation b) Heteroscedasticity	[5]	1 2
Q.1(b)	Discuss the concept of Multicollinearity. How would you identify and rectify multicollinearity present in the dataset.	[5]	1 2
Q.2(a)	Explain any three applications of Exploratory Factor Analysis. Comment on the following results of an Exploratory Factor Analysis: KMO = 0.61; Bartlett's Test of Sphericity: 0.000 (p value); Cronbach's Alpha: Factor 1 = .569, Factor 2 = .711, Factor 3 = .655, Factor 4 = .790. Total Variance Explained = 59%	[2+3]	3 2
Q.2(b)	Differentiate between Exploratory Factor Analysis and Confirmatory Factor Analysis.	[5]	2 2
Q.3(a)	Explain in brief the role of Structural Equation Modelling in Multivariate Data Analysis.	[5]	3 2
Q.3(b)	Differentiate between One-Way ANOVA, Two-Way ANOVA, and MANOVA with suitable examples.	[5]	4 4
Q.4(a)	Explain the role and applications of discriminant analysis business decision making with suitable examples.	[5]	4 2
Q.4(b)	Varun is 41 years old, with Experience of 15 years and No. of Years of in the current organization is 9. As per the details below of the discriminant model, his application for a credit card is accepted or rejected: a. Zone of Confusion: (Low Retention)- 1.143 to + 1.143 (High Retention) b. Constant: = -10.102 c. Coefficient: Age = 0.198, (taken in 10,000') Experience = 0.107, No. of Years in the current organization = 0.960. Predict that whether Varun will be categorized as "high retention" employee or a "Low Retention" employee.	[5]	4 3
Q.5(a)	Discuss the various applications of Functional Data Analysis with suitable examples	[5]	1 2
Q.5(b)	Demonstrate how you will use Functional Data Analysis in Retail Management and Production and Manufacturing.	[5]	2 4