RAN-2508000605020008

RAN-2508000605020008

B.Com. Data Science (NCF- NEP) (Sem. - V) Examination October - 2025

Multivariate Techniques For Data Analytics (Major)

[Total Marks: 50

સૂચના : / Instructions (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી. Fill up strictly the above details on your answer book	Seat No.: Student's Signature

Q. 1 **Answer the following questions: (Any Five)** **(10)**

1. What is Multivariate Analysis?
2. Define Hotelling's T^2 statistic.
3. What is the primary purpose of Hotelling's T^2 test?
4. Define Factor Analysis.
5. Define Discriminant Analysis.
6. Differentiate between separation and classification in discriminant analysis.
7. What is Fisher's Discriminant Function (FDF)?

Q. 2 Discuss the types of Factor Analysis with suitable examples and Explain the entire PCA procedure with interpretation of principal components. **(14)**

OR

Q. 2 **Write following answers:**

(A) Describe the concept and applications of the Multivariate Normal Distribution. **(07)**

(B) Discuss in detail the applications of Discriminant Analysis. **(07)**

Q. 3 Explain the applications of MANOVA across different fields and Discuss in detail the assumptions of MANOVA. **(14)**

OR

Q. 3 **Write following answers:**

(A) Explain properties of the Multinomial Distribution. **(07)**

(B) Explain the process of classifying several populations using canonical variates and Mahalanobis distance. **(07)**

Q. 4 **Write short notes: (Any Three)** **(12)**

1. Briefly explain the key assumptions of Hotelling's T^2 test.
2. Explain the assumptions of discriminant analysis.
3. Write short notes on Group Centroids in multi-group classification.
4. Differentiate between ANOVA and MANOVA (any four points).
5. Explain the assumptions of Canonical Correlation Analysis

———