



Seat No. _____

HJ-003-1172003

M. Sc. (Sem. II) Examination

April - 2023

MS-203 : Applied Multivariate Analysis

Faculty Code : 003

Subject Code : 1172003

Time : **2:30** Hours / Total Marks : **70**

1 Answer Briefly any Seven of the following questions : **14**

- (1) What is Multivariate Analysis ?
- (2) Write characteristics function of Wishart's distribution.
- (3) Define Singular Distribution.
- (4) State the necessary and sufficient condition for Multivariate Normal distribution.
- (5) Which function is used for k-means clustering ?
- (6) The Wishart's distribution is a multivariate generalization of _____ distribution.
- (7) The Canonical Correlation is a multivariate analysis of _____.
- (8) Define Mean Vector for Multivariate Data.
- (9) The p.d.f of Multivariate Normal Distribution is _____.
- (10) If X_1, X_2, \dots, X_N be a random sample of size N from $N_p(\mu, \Sigma)$ then $\bar{X} \sim$ _____.

2 Answer any two of the following questions : **14**

- (1) Define Marginal distribution of MVND.
- (2) Define determination of A for MVND.
- (3) Explain Principal component analysis.

- 3** Answer the following questions : **14**
(A) Derive characteristic function of Wishart Distribution.
(B) Derive Maximum Likelihood Estimators of Mean vector for MVND.

OR

- 3** Answer the following questions : **14**
(A) Write Statement and prove that Condition Distribution of Wishart's distribution.
(B) Explain Classification and Discrimination.

- 4** Answer the following questions : **14**
(A) Write any Two properties of Canonical correlation.
(B) Explain Fisher's Criterion.

- 5** Answer any Two of the following questions : **14**
(1) Explain methods for Cluster analysis.
(2) Distinguish Factor Analysis and Principal Component Analysis.
(3) Explain Classification into two Multivariate Normal Population.
(4) Derive best regression equation for multivariate normal distribution.
