

QP CODE: 26801757



Reg No :

Name :

INTEGRATED M.Sc. DEGREE EXAMINATION, APRIL 2026

Eight Semester

INTEGRATED M.Sc. BASIC SCIENCES-STATISTICS

CORE - IST8CR03 - ADVANCED MULTIVARIATE ANALYSIS

2020 Admission Onwards

5C7D18F3

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. Explain multivariate statistical analysis.
2. What do you mean by Mahalanobis distance?
3. What do you understand by problem of symmetry in multivariate analysis?
4. Explain factor analysis.
5. What is confirmatory factor analysis?
6. How canonical correlation and multiple correlation are related?
7. Explain hierarchical clustering methods
8. Explain the k-mean clustering.
9. Is Pillai's trace more robust than Wilk's lambda? Why?
10. In what context is Roy's maximum root statistic particularly useful?

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

Weight 2 each.

11. Explain how Hotelling's T square test is used to test the hypothesis that the mean vector of a multivariate normal distribution is equal to a specified vector when Σ is unknown.
12. Discuss the invariance properties of Hotelling's D square statistics under linear transformations.
13. What are the differences between PCA and factor analysis?





14. Explain MLE of principal components.
15. Briefly explain the profile analysis.
16. Explain cluster analysis.
17. Distinguish between monothetic and polythetic method of clustering.
18. Discuss the mathematical formulation of Wilk's lamda and its implications.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

Weight 5 each.

19. Derive Hotelling's T square as function of the likelihood ratio criteria.
20. Explain the hotelling's iterative procedure for the computation of canonical correlation and canonical variable.
21. Explain the procedure of classification in to one of the several multivariate normal populations.
22. Discuss in detail two-way MANOVA.

(2×5=10 weightage)

