



QP CODE: 26019222



26019222

Reg No :

Name :

MA DEGREE (CSS) EXAMINATION, MARCH 2026

Fourth Semester

M A ECONOMICS

ELECTIVE - EC810403 - MULTIVARIATE DATA ANALYSIS FOR SOCIAL SCIENCES

2019 Admission Onwards

9F1F8A59

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. What are the assumptions of factor analysis?
2. What is confirmatory factor analysis?
3. What is Wilks' Lambda in MANOVA?
4. Define Wilks' Lambda in discriminant analysis.
5. What is the main difference between logistic regression and linear regression?
6. Discuss different procedures for cluster analysis.
7. Explain the data consideration for canonical correlation analysis.
8. How does MDS differ from other dimensionality reduction techniques like PCA and Factor Analysis?
9. Describe the process of normalizing data in correspondence analysis. Why is normalization important?
10. Describe the concept of mediation in SEM.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

Weight 2 each.

11. An educational researcher aims to understand the different competencies being measured by a standardized math test to determine the underlying skill sets (e.g., algebra, geometry, data analysis) assessed by the test items. Identify appropriate method of analysis and justify your answer.
12. A retail store chain wants to assess the impact of two promotional strategies (discount coupons vs. loyalty points) on sales and customer satisfaction, while controlling for the effect of customer income level.





The retail store chain wants to determine:

- a. If there are significant differences in sales and customer satisfaction between the two promotional strategies.
- b. The influence of customer income level on the relationship between promotional strategies and the dependent variables (sales and customer satisfaction).

By including customer income level as a covariate, the retail store chain can control for its impact, providing a clearer understanding of how each promotional strategy independently affects sales and customer satisfaction.

What analysis can be used in this context to identify the impact of two promotional strategies and impact of income level

13. Procter and Gamble is planning to arm all its TSI (territorial sales inspector) agents with palmtop system. Bangalore division of P & G decided to grade TSIs based on efficiency and potential of service dealers in their respective territories. The classification will be 'potentially successful TSI' and 'potentially unsuccessful TSI', based on their experience in terms of number of years, sales in rupees per year and number of dealers covered by each TSI.
14. The result of a logistic regression, where the dependent variable is whether a customer buys a product (1 = Yes, 0 = No), and the predictors are age and income, is given below. Interpret the result of the analysis

Variables in the Equation:

	B	S.E.	Wald	df	Sig.	Exp(B)
Age	0.05	0.02	6.25	1	0.012	1.051
Income	0.01	0.001	10.5	1	0.001	1.010
Constant	-3.5	0.80	19.25	1	0.000	0.030

15. Explain various statistics associated with cluster analysis.
16. Discuss the significance of the canonical correlation coefficients in CCA. What does a high canonical correlation coefficient indicate?
17. Educators would like to visualize students' perceptions of different learning activities like power point presentation, case studies, roleplays, class room lecturing etc. which will help to identify which activities are seen as similar or distinct in terms of engagement and effectiveness. Identify the appropriate tool for analysis in this context and justify your result.
18. Explain the fundamental concept of correspondence analysis and its primary purpose in data analysis.

(6×2=12 weightage)

Part C (Essay Type Questions)

Answer any **two** questions.

Weight 5 each.

19. What is MANOVA and how it is different from MANCOVA? Explain the advantages of MANOVA and its applications in social science research.





20. Discuss the process of Linear Discriminant Analysis (LDA), including its mathematical formulation, steps involved in implementing LDA, and practical applications. Illustrate with an example.
21. Explain the concept of canonical variates in Canonical Correlation Analysis (CCA). How are they different from the original variables? What are canonical loadings, and how do they aid in interpreting the results of CCA?
22. Explain the theoretical foundations of Multidimensional Scaling (MDS). How does MDS differ from other dimensionality reduction techniques such as Principal Component Analysis (PCA) and Factor Analysis?

(2×5=10 weightage)

