

## Integ. M.Sc AIML Semester-8 Examination

CC-411

## Multivariate Analysis

Time : 2-30 Hours]

April-2024

[Max. Marks : 70

**Instructions:** All questions are compulsory. Use of non-programmable scientific calculator is allowed.

- Q.1** (a) What is the role of communalities in measuring the total variance explained by the extracted factors? (07)
- (b) What is the basic purpose of factor analysis? Explain the conditions that are required to be satisfied before carrying out a factor analysis exercise. (07)
- OR**
- (a) Why is varimax rotation method used instead of the principal component method? (07)
- (b) Explain briefly the concept of Kaiser method in deciding the number of factors to be extracted. (07)
- Q.2** (a) What is discriminant analysis? Explain the various steps in carrying out a discriminant analysis exercise. (07)
- (b) List a few studies where discriminant analysis can not be applied and explain how? (07)
- OR**
- (a) Distinguish between regression and discriminant analysis. (07)
- (b) What is Wilks' lambda? How is it computed? What is its role in a discriminant analysis? (07)
- Q.3** (a) What is the difference between k-means clustering and two step clustering? (07)
- (b) What is an agglomeration schedule? How does the technique help in taking a clustering decision? (07)
- OR**
- (a) Differentiate between Single linkage, Complete linkage and Average linkage method in detail. (07)
- (b) What is hierarchical clustering? – Explain. (07)
- Q.4** (a) What is Multidimensional scaling? Explain in brief the underlying assumptions of the technique. (07)
- (b) Explain in detail the steps involved in carrying out a similarity-based Multidimensional Scaling. Use suitable example to do so. (07)
- OR**
- (a) Explain in detail the steps involved in carrying out a preference-based Multidimensional Scaling. Use suitable example to do so. (07)
- (b) Write usages of Multidimensional scaling. (07)
- Q.5** Attempt any **SEVEN** out of **TWELVE**: (14)
- (1) Describe Eigenvalue and Factor loading for Factor Analysis exercise.
- (2) What is the difference between Metric and non-metric data inputs for Multidimensional Scaling?
- (3) Write the formula for standardized score of  $i^{th}$  respondent on a statement.
- (4) "Optimizing procedure is a non-hierarchical method of clustering" True/False – Explain.

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- (5) Write an equation for Hit ratio.
- (6) What is canonical correlation?
- (7) If eigenvalue of factor 1 is 2.054 and total sum of eigenvalues is 7 then what will be the percentage of variance explained by factor 1.
- (8) Mention all three types of Non-hierarchical methods.
- (9) Explain Ward's method in brief.
- (10) If centroid values of Buyer and non-buyer is 0.5 and -0.5 respectively, what will be the cutoff value for the respective research problem?
- (11) Which analysis can be used to generate perceptual maps using Multidimensional Scaling?
- (12) Write null hypothesis for Bartlett's Test of Sphericity and also write the appropriate condition for performing Factor analysis.

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