INDIAN STATISTICAL INSTITUTE (MS-QMS)_2025 MID-SEMESTER EXAMINATION (Pattern Recognition)

Duration: 90 minutes

Maximum Marks: 30

[2]

Note: Answer any FIVE

- 1. Make an illustrative and brief description of the components of principles of the pattern [6] recognition systems in a decision-making process.
- 2. Discuss measures of Location, Spread, Shape, and Dependence with their applications. [6]
- 3. If X is a data set with 9 samples and 2 features each. Find the Euclidean and Mahalanobis distances between 2nd and 5th samples of X. Explain the reasons for the different distance values and their merits and demerits.

XX =[4	5 [6]
3	2
3	2
1	6
0	2
5	7
7	9
3	7
2	1];

- 4. Provide a complete interpretation of the Box and Whisker Plot Analysis of a data set. How it behaves for symmetric and skewed data. [6]
- 5.

a. Differentiate between similarity and dissimilarity measures of data points with equations. [4]

- b. Establish the relationship between variance-covariance matrix with correlation matrix. [2]
- 6.
- a. Explain with equations and examples for the Similarity measure and Dissimilarity measure. [4]
- b. Explain the probability density function of a distribution with properties.