

B-E SEM-III C-Scheme Summer 2025

216125

Duration: 3hrs

Max Marks:80

- N.B. : (1) Question No 1 is Compulsory.
 (2) Attempt any **three** questions out of the remaining **five**.
 (3) All questions carry equal marks.
 (4) Assume suitable data, if required and state it clearly.

- Q1. Solve any **four** from following. [20]
 a. What are the issues in Machine learning?
 b. Explain Regression line, Scatter plot, Error in prediction and Best fitting line.
 c. Explain the concept of margin and support vector.
 d. Explain following performance metrics along with an example Accuracy, Precision, Recall and F1 score.
 e. Explain Logistic Regression

- Q2. a. Explain the steps of developing Machine Learning applications. [10]
 b. Write short note on Linear Discriminant projection along with an example. [10]

- Q3. a. Demonstrate CART method along with an example. [10]
 b. Following table shows the midterm and final exam grades obtained for students in a database course. Using linear regression to predict the final exam grade of a student who received 86 in the midterm exam. [10]

Midterm exam (X)	72	50	81	74	94	86	59	83	86	33	88	81
Final exam (Y)	84	53	77	78	90	75	49	79	77	52	74	90

- Q4. a. Explain the Random Forest algorithm in detail. [10]
 b. Explain the different ways to combine the classifiers. [10]

- Q5. a. Describe Multiclass classification. [10]
 b. Demonstrate MST algorithm along with example. [10]

- Q6. Write detailed note on following. (Any two) [20]
 a. Performance Metrics for Classification
 b. Principal Component Analysis for Dimension Reduction
 c. DBSCAN algorithm.
