

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA – SEMESTER V- EXAMINATION –WINTER-2025

Subject Code: 4659302

Date: 17/11/2025

Subject Name: Machine Learning

Time:10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make Suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use of simple calculators and non-programmable scientific calculators are permitted.

- Q.1 (a) Answer the following. 04**
1. Define boosting.
 2. Define hyperplane.
 3. List the applications of Naïve Bayes Classifier.
 4. Cricket match win/loss prediction is _____ problem.
(Classification/Regression).
- (b) Discuss concept of biological neuron. 03**
- (c) Compare supervised learning, unsupervised learning and reinforcement learning. 07**
- Q.2 (a) Write short note on dimensionality reduction. 04**
- (b) Discuss the bias variance trade off. 03**
- (c) Explain the measures of feature relevance and feature redundancy. 07**
- OR**
- (c) Discuss ways to evaluate the performance of a model for supervised learning - regression. 07**
- Q.3 (a) Explain Bayes Theorem. 07**
- (b) What is feature extraction? Explain principal component analysis in detail. 07**
- OR**
- Q.3 (a) Explain decision tree algorithm in detail. Also list out the application of decision tree algorithm. 07**
- (b) Explain Bayesian belief network with reference to the concept of conditional independence. 07**
- Q.4 (a) Discuss simple linear regression algorithm. 07**
- (b) Explain K-Nearest Neighbor algorithm. List the strength and weakness of KNN. 07**
- OR**
- Q.4 (a) Define clustering. Explain hierarchical clustering in brief. 07**
- (b) Discuss the polynomial regression model. 07**
- Q.5 (a) Explain Apriori algorithm with suitable example. 07**
- (b) Write short note on: 07**
1. Single layer feed forward network
 2. Multi layer feed forward network
- OR**
- Q.5 (a) List and explain types of activation functions. 07**
- (b) Explain k-medoids clustering technique in detail. 07**
