

Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 6 – EXAMINATION – SUMMER 2026

Subject Code: 3164205

Date: 26/05/2026

Subject Name: Predictive Analytics

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. Simple and non-programmable scientific calculators are allowed.**

- Q.1**
- (a) Compare and contrast Mean Squared Error (MSE) and Mean Absolute Error (MAE). **03**
 - (b) Elaborate the working of Hold out Method. Illustrate with a neat sketch. **04**
 - (c) Compare and contrast Ridge Regression vs. Lasso Regression. **07**
- Q.2**
- (a) Differentiate between Predictive Model vs Descriptive Model. **03**
 - (b) Outline the methods for choosing appropriate number of clusters in K-Means Clustering algorithm. **04**
 - (c) Elaborate the working of Logistic Regression and explain various applications. **07**
- OR
- Q.2**
- (c) Elaborate the working of KNN algorithm. Can KNN be considered as an 'Eager Learner'? Justify your answer. **07**
- Q.3**
- (a) What is Supervised Learning? Explain with suitable examples. **03**
 - (b) Explain the following terminologies with respect to Support Vector Machine :
(i)Hyperplane (ii)Support Vectors (iii)Kernel (iv)Convex Hull. **04**
 - (c) Elaborate the working of Leave-One-Out cross-validation with a neat sketch. **07**
- OR
- Q.3**
- (a) What is Unsupervised Learning? Explain with suitable examples. **03**
 - (b) Distinguish between SVM classifier vs. SVM regressor. **04**
 - (c) Elaborate the working of Leave-P-Out cross-validation with a neat sketch. **07**
- Q.4**
- (a) Elaborate the working of Devisive Clustering with a neat sketch. **03**
 - (b) Explain Bias-Variance trade-off with a neat sketch. **04**
 - (c) List and explain the various components of Generalized Additive Models. **07**
- OR
- Q.4**
- (a) Elaborate the working of Agglomerative Clustering with a neat sketch. **03**
 - (b) Define Bias . Explain ways to control bias in various Machine Learning algorithms. **04**
 - (c) Differentiate between Generalized Additive Models vs. Linear Regression. **07**
- Q.5**
- (a) Differentiate between Decision stumps vs. Decision trees. **03**
 - (b) List and explain the strength and weaknesses of Naïve Bayes Classifier. **04**

(c) Breakdown and explain the various steps of a Principal Component Analysis algorithm for process of dimensionality reduction. **07**

OR

Q.5 (a) Differentiate between Gradient Boosting vs. Adaptive Boosting(AdaBoost). **03**

(b) Breakdown and explain the various steps of a Random Forest algorithm for the classification process. **04**

(c) Breakdown and explain the various steps of Apriori algorithm . Illustrate with a neat flow diagram. **07**
