

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - VI EXAMINATION - WINTER 2025

Subject Code: 3164205

Date: 19-11-2025

Subject Name: Predictive Analytics

Time: 02:30 PM TO 05:00 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.**

	Marks
Q.1 (a) Explain simple linear regression and derive the least squares method.	03
(b) Differentiate between ridge regression and lasso regression.	04
(c) Develop a multiple linear regression model for predicting house prices using suitable dataset.	07
Q.2 (a) Explain logistic regression with suitable example.	03
(b) Compare SVM for classification and regression.	04
(c) Design a Naive Bayes classifier for spam detection problem.	07
OR	
(c) Implement KNN classifier and discuss its advantages and disadvantages.	07
Q.3 (a) Define bias, variance and model complexity.	03
(b) Explain bias-variance tradeoff with neat diagram.	04
(c) Apply K-fold cross validation technique and explain its advantages.	07
OR	
(a) Discuss the various measures used to validate the simple linear regression.	03
(b) Explain LDA with example.	04
(c) Demonstrate bootstrapping method with example.	07
Q.4 (a) Explain generalized additive models with examples.	03
(b) Compare regression and classification trees.	04
(c) Discuss AdaBoost and gradient boosting methods with applications.	07
OR	
(a) Define continuous random variable and discrete random variable with example.	03
(b) Analyze the process of feature subset selection in detail.	04
(c) Explain numerical optimization in gradient boosting.	07

- Q.5** (a) Define association rules and give suitable example. 03
- (b) Explain principal component analysis. 04
- (c) Apply random forest algorithm on a sample dataset and discuss its performance. 07

OR

- (a) Differentiate between clustering and classification techniques. 03
- (b) Write a short note on Cluster Analysis. 04
- (c) Explain Naive Bayes' theorem in details. 07
