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Bengaluru

Mid Term Examinations - October 2026

Date: 05/10/2026 **Time:** 02:00 PM - 03:30 PM

Course Code: ISE2506 **Course Name:** Machine Learning

Semester: Fifth Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	112	68

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	What is feature engineering? Give one example.	2	CO1	BT3
2	When is median imputation preferred over mean imputation?	2	CO1	BT3
3	Write the equation of a simple linear regression model.	2	CO1	BT3
4	What does the elbow method help determine in k-means clustering?	2	CO2	BT3
5	State two difference between k-means and DBSCAN clustering.	2	CO2	BT3

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	A house-price dataset contains area, number of bedrooms, age of the house, and selling price. Explain how you would prepare the data and build a simple linear regression model to predict selling price.	10	CO1	BT3
7	A dataset contains house area and selling price, but the price pattern is curved rather than linear. Explain how polynomial regression can be applied and mention one risk of using a very high-degree polynomial.	10	CO1	BT3

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
8	A bank wants to classify loan applications as approved or rejected using customer income, credit score, and loan amount. Explain how logistic regression can be used for this task.	10	CO1	BT3
9	A message-filtering system must classify emails into Spam, Social, and Promotions. Explain how softmax regression and cross-entropy loss can be used.	10	CO1	BT3

PART D: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
10	Use Naïve Bayes to classify a message when the features are “contains offer” and “contains link.” State the main assumption made by Naïve Bayes.	10	CO1	BT3
11	A two-class dataset is not perfectly separable. Explain how a soft-margin Support Vector Machine can be used and state the role of the kernel trick.	10	CO1	BT3

PART E: Answer Any 1 Following Questions. 10 M

PTO (Please Turn Over)

Q.N.	Questions	M	CO	BT
12	A retail company wants to group customers using annual income and spending score. Explain how k-means clustering can be applied, including how the number of clusters can be selected.	10	CO2	BT3
13	A transaction dataset contains normal transactions along with a few unusual ones. Explain how Isolation Forest or Local Outlier Factor can be used to detect outliers.	10	CO2	BT3