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Bengaluru

Mid Term Examinations - October 2026

Date: 08/10/2026 **Time:** 11:45 AM - 01:15 PM

Course Code: CSE2267 **Course Name:** Machine Learning Techniques

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

CO - Levels	CO1	CO2
Marks	90	90

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Define data imputation. Mention any two methods used for handling missing values	2	CO1	BT1
2	Outline the kernel trick in SVM. Name any two kernel functions.	2	CO1	BT2
3	Differentiate between Bagging and Pasting based on the method of sampling	2	CO2	BT2
4	Define Entropy. State the value of the entropy of a completely pure set.	2	CO2	BT1
5	Differentiate between AdaBoost and Gradient Boosting based on how they handle errors.	2	CO2	BT2

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	Demonstrate the application of Feature Engineering and Data Imputation techniques with suitable examples.	10	CO1	BT3
7	Demonstarte Simple Linear Regression and Logistic Regression, explaining their model formulation, loss functions, and key concepts such as MSE, MAE, RMSE, sigmoid function, and decision boundary.	10	CO1	BT3

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT

PTO (Please Turn Over)

8	Apply the concept of Bayes' theorem to explain how prior probability and new evidence are used to make a prediction. Explain how the Naive Bayes classifier can be applied to classify data into different classes in below example for the given new instances . (Outlook=Sunny.Temperature=Cool,Humidity=High ,Wind=Strong) **Outlook Temperature Humidity Windy Play Tennis?** Rainy Hot High FALSE No Rainy Hot High TRUE No Overcast Hot High FALSE Yes Sunny Mild High FALSE Yes Sunny Cool Normal FALSE Yes Sunny Cool Normal TRUE No Overcast Cool Normal TRUE Yes Rainy Mild High FALSE No Rainy Cool Normal FALSE Yes Sunny Mild Normal FALSE Yes Rainy Mild Normal TRUE Yes Overcast Mild High TRUE Yes Overcast Hot Normal FALSE Yes Sunny Mild High TRUE No	10	CO1	BT3
9	Given a non-linearly separable dataset, apply the kernel trick in SVM and explain how it helps in separating the data into different classes.	10	CO1	BT3

PART D: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
10	Derive the relationship between entropy, and information gain in Decision Tree learning.Using a suitable example, explain how the attribute having the highest information gain is selected for splitting.	10	CO2	BT3
11	Illustrate voting classifier and explain how it is better than any classifier taken individually, support your answer with necessary diagrams and graphs.	10	CO2	BT3

PART E: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
12	Demonstrate how Random Forest Machine Learning Algorithm is an improved version of Decision Tree Classifier. Support your answer with diagrams.	10	CO2	BT3
13	Demonstrate the concept of stacking and ensemble. Also, explain how a Multilayer Stacking Ensemble makes predictions	10	CO2	BT3