

CBCS SCHEME - Make-Up Exam

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BAI602

Sixth Semester B.E/B.Tech. Degree Examination, June/July 2025

Machine Learning - I

Max. Marks: 100



Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

Module – 1			M	L	C
1	a.	Explain the relationship of Machine Learning with other fields such as Artificial Intelligence, Data Mining and Statistics.	10	L3	CO1
	b.	Describe the entire Machine Learning Process with a real world example.	10	L2	CO1
OR					
2	a.	Discuss the Big Data Analysis Framework and its significance in Machine Learning.	10	L3	CO1
	b.	Describe univariate data Analysis and the techniques used for its visualization, with suitable examples.	10	L3	CO1
Module – 2					
3	a.	Differentiate between bivariate and multivariate data with appropriate example.	6	L2	CO2
	b.	What is overfitting in Machine Learning? Discuss two ways to mitigate it.	7	L3	CO2
	c.	Explain the importance of dividing data into training, testing and validation sets.	7	L3	CO2
OR					
4	a.	Define and differentiate between Precision, recall and F1 – score.	6	L3	CO2
	b.	Explain Receiver Operator Characteristics (ROC) curve and its interpretation.	7	L3	CO2
	c.	What is Principal Components Analysis (PCA) ? Explain how it helps in Reducing dimensionality.	7	L3	CO2
Module – 3					
5	a.	Describe the concept of working of the Nearest centroid classifier. Compare its performance and assumption with – K – Nearest – Neighbor algorithm.	10	L4	CO3
	b.	What is Locally Weighted Regression (LWR)? Discuss how it differ from Standard Linear Regression and explain its significance in modeling non-linear Relationship	10	L4	CO3
OR					
6	a.	Discuss the various types of Regression techniques Linear Regression Multiple Linear Regression and Logistic Linear Regression and provide a example of real events.	10	L4	CO3
	b.	What are the key assumption underlying linear Regression? How do these assumption affect the validity of Regression Model.	10	L4	CO3

Module – 4

7	a.	Explain the working of Decision Tree Learning model. How does it use attributes to make classification decisions? Illustrate with a simple example.	10	L4	CO3
	b.	What is importance of validating and pruning in Decision Tree? Explain different pruning techniques and their impact on overfitting.	10	L3	CO4

OR

8	a.	Describe the fundamentals of Bayesian Learning. How does the Naive Bayes Algorithm handle continuous attributes? Support your answer with example.	10	L3	CO4
	b.	What is Decision Tree? Draw a simple example of a decision tree for classifying whether a person should carry an umbrella based on weather condition.	10	L4	CO4

Module – 5

9	a.	What is an Artificial Neural Network (ANN)? Explain the structure and working of a perceptron with the help of a diagram, how does it learn from input data?	10	L5	CO5
	b.	Compare biological neurons with artificial neurons. What are the main similarities and differences?	10	L4	CO5

OR

10	a.	Explain various clustering approaches. Compare Hierarchical clustering, partitioning clustering and density based clustering.	10	L4	CO5
	b.	What are the major challenges faced while using Artificial Neural Networks. (ANNs)? Explain each challenge with suitable example.	10	L4	CO5
