

Course Code: 23AM4T01

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(AUTONOMOUS)

II - B. Tech II-Semester Supplementary Examinations (BR23), Aug - 2025

MACHINE LEARNING (AI&ML)

Time: 3 hours

Max. Marks: 70

*Question Paper consists of Part-A and Part-B
Answer ALL the questions in Part-A and Part-B*

PART-A (10X2 = 20M)

	Marks	CO	BL
1. a) What is the purpose of "Data Acquisition" in Machine Learning?	(2M)	CO1	BL1
b) Differentiate between "Supervised" and "Unsupervised" learning	(2M)	CO1	BL2
c) Write about Impurity Measuring Technique in Decision Trees	(2M)	CO2	BL2
d) What is "Model Selection" and why is it important?	(2M)	CO2	BL2
e) What is Regression? Mention the properties of Regression	(2M)	CO3	BL3
f) Define Perception classifier?	(2M)	CO3	BL2
g) Differentiate Linear and Logistic Regression?	(2M)	CO4	BL3
h) Write about back propagation of training Algorithm	(2M)	CO4	BL1
i) Mention types of clustering's in Machine Learning?	(2M)	CO5	BL1
j) Define soft partitioning and soft clustering.	(2M)	CO5	BL1

PART-B (5X10 = 50M)

2a. What is Machine Learning? Explain different data sets in Machine Learning	6(M)	CO1	BL2
b. Categorize the types of Machine Learning.	4(M)		
(OR)			
3a. Explain Data Representation in Machine Learning	5(M)	CO1	BL2
b. Write about Matching and its purpose in Machine Learning	5(M)		
4a. Explain the concept of "Distance Measures" and discuss the importance of choosing the right measure in KNN.	4(M)	CO2	BL2
b. Explain Radius Distance Nearest Neighbour Algorithm?	6(M)		
(OR)			
5a. Explain the differences between "KNN Classification" and "KNN Regression" and provide examples of their applications.	6(M)	CO2	BL2
b. Write about Non Metric Similarity Functions with example.	4(M)		
6a. Explain the "Random Forests" algorithm for both classification and regression. Discuss the advantages of using Random Forests over single decision trees.	6(M)	CO3	BL1

- b. explain the fundamental concepts of "Bayes' Rule and Inference." Discuss the optimality of the Bayes Classifier and its practical limitations. 4(M)
- (OR)
- 7a. Explain the "Naive Bayes Classifier (NBC)" in detail. Discuss the assumption of "Class Conditional Independence" and its implications 5(M) CO3 BL2
- b. Explain the process of building a decision tree, including the selection of splitting attributes and the handling of continuous and categorical features. 5(M)
- 8 Explain the concept of "Linear Discriminants for Classification." Describe the general form of a linear discriminant function 10(M) CO4 BL2
- (OR)
9. Describe the "Perceptron Classifier" and the "Perceptron Learning Algorithm." Explain how the algorithm works and discuss its limitations. 10(M) CO4 BL2
- 10 Explain about Partitioning and Agglomerative clustering Method with example 10(M) CO5 BL2
- (OR)
11. Apply K-Means Clustering Algorithm for given Example Data set take $k=3$, X_1, Y_1 and Z_1 as initial centroids 10(M) CO5 BL3

Data Points		
X1	3	9
X2	2	5
X3	5	6
Y1	6	7
Y2	5	8
Y3	3	4
Z1	7	5
Z2	2	3
Z3	1	1
