Reg. No.												

Question Paper Code	12189

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

Seventh Semester

Computer Science and Engineering

CS8082 - MACHINE LEARNING TECHNIQUES

(Regulations 2017)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	Define machine learning with suitable example.	*2,K1,CO1*
2.	List the classification types of Machine Learning.	*2,K2,CO1*
3.	What is perceptron? When the perceptron does fails to converge?	*2,K2,CO2*
4.	How do we use numeric features in naïve Bayes algorithm?	*2,K2,CO3*
5.	Is k-Means Clustering guaranteed to converge to an optimal clustering? Justify your answer.	*2,K2,CO4*
6.	List the different regression models.	*2,K1,CO4*
7.	How does Inductive Learning differ from Analytical Learning?	*2,K2,CO5*
8.	List the parameters used in temporal difference learning?	*2,K1,CO5*
9.	Compare Inductive and Analytical Learning Problems.	*2,K2,CO6*
10.	What is horn clause? How is it expressed?	*2,K1,CO6*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Explain in detail about types of Machine Learning with examples.	*13,K2,CO1*
		OR	
	b)	(i) Elaborate Hypothesis Space Search and Inductive Bias in Decision tree Learning.	*8,K2,CO1*
		(ii) Examine the issues in Decision Tree Learning.	*5,K2,CO1*
12.	a)	Draw the model and explain the algorithm for back propagation. Derive necessary equations to depict the back propagation error.	*13,K2,CO2*
		OR	
	b)	Explain Genetic Algorithm in detail.	*13,K2,CO2*
13.	a)	Elaborate on Q functions, algorithm for Q learning in reinforcement learning.	*13,K2,CO6*
		OR	

b) Memorize about the Analytical learning model with example. *13,K2,CO6*

14. a) Write K-Means algorithm. *13,K3,CO4*

Suppose that the data mining task is to cluster the following eight points (with (x, y) representing location) into three clusters.
A1(2, 10), A2(2, 5), A3(8, 4), B1(5, 8), B2(7, 5), B3(6, 4), C1(1, 2), C2(4, 9).
The distance function is Euclidean distance. Suppose initially we assign A1, B1, and C1 as the center of each cluster, respectively.
Use the k-means algorithm to show only
(i)The three cluster centers after the first round of execution and
(ii)The final three clusters.

OR

b) (i) Write a short note on Radial Basis Functions. *5,K2,CO4*
(ii) Illustrate Case based Learning in detail. *8,K3,CO4*

15. a) (i) Explain how Sequential Covering algorithm learns rule sets? *7,K2,CO5*
(ii) Illustrate FOIL algorithm of learning First-order rules. *6,K3,CO5*

OR

b) Describe Reinforcement learning with suitable example. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Compose the Inductive Bias and Generalize the Hidden Layer Representations. *15,K3,CO3*

OR

b) Analyze the multi-layer perceptron model with a neat diagram. *15,K3,CO3*