PVP 20

Code: 20CS3602

III B.Tech - II Semester – Regular / Supplementary Examinations
APRIL 2024

MACHINE LEARNING
(COMPUTER SCIENCE & ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1		Briefly discuss about checkers problem using learning system.	L2	CO1	14 M
OR					
2	a)	Give three computer applications for which machine learning approaches seem appropriate and three for which they seem inappropriate.	L2	CO1	7 M
	b)	Explain about Decision Tree learning algorithm.	L2	CO2	7 M
UNIT-II					
3	a)	What is perceptron? Explain with necessary diagram.	L2	CO1	7 M
	b)	Discuss about perceptron training rule.	L2	CO2	7 M

		OR			
4		Explain about Back-propagation learning algorithm with necessary neural network diagram.	L3	CO2	14 M
		UNIT-III			
5	a)	Explain sample error and true error with an example.	L2	CO2	7 M
	b)	What is "Bias in the estimate" and "Variance in the estimate"?	L2	CO2	7 M
		OR			
6		Explain about Bagging with an example.	L2	CO2	14 M
		UNIT-IV			
7	a)	What is the role of the kernel function in a support vector machine, and how does it impact the SVM's ability to separate classes in a non-linearly separable dataset?	L3	CO4	7 M
	b)	What is the underlying principle behind the k-nearest neighbor algorithm, and how does it make predictions based on the distances between data points in a given dataset?	L3	CO2	7 M
		OR			
8		What is Weighted Nearest Neighbor algorithm and how does it use weights to improve the accuracy of predictions in classification problems? Explain with an example.	L3	CO4	14 M

UNIT-V					
9		Consider the following two-dimensional data points as given below. D = {(2, 10), (2, 5), (8, 4), (5, 8), (7, 5), (6, 4), (1, 2), (4, 9)}. Cluster the data points using K means clustering algorithm. Consider K=3 and three initial cluster centers as (2,10) and (5, 8), and (1,2). Use City-block distance to compute distance between the samples. Demonstrate all steps with proper calculations for at least two iterations.	L4	CO4	14 M
OR					
10	a)	Discuss any two unsupervised machine learning techniques.	L2	CO3	7 M
	b)	Discuss about the Intrinsic methods used for measuring the clustering quality.	L2	CO3	7 M