P P SAVANI UNIVERSITY

Seventh Semester of B.Tech. Examination

November 2022

SECE4523 Machine Learning

01.12.2022, Thursday **Time: 10:00 a.m. To 12:30 p.m.** **Maximum Marks: 60**

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in same answer sheet.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION – I

			CO	BTL
Q - 1	**Define: (Any Five)**	**[05]**		
(i)	Artificial Intelligence.		**1**	**1**
(ii)	Problem.		**1**	**1**
(iii)	Decision Tree		**1**	**1**
(iv)	Algorithm.		**1**	**1**
(v)	Learning System.		**1**	**1**
(vi)	Prototype.		**1**	**1**
(vii)	Induction.		**1**	**1**
Q - 2 (a)	What are the important objectives of machine learning?	**[05]**	**1**	**2**
Q- 2 (b)	What are the issues in Machine Learning?	**[05]**	**1**	**2**
	OR			
Q - 2 (a)	What are the advantages of using Machine Learning?	**[05]**	**1**	**2**
Q – 2 (b)	Differentiate between Supervised, Unsupervised and Reinforcement Learning.	**[05]**	**1**	**3**
Q - 3	Explain the various issues in Decision tree Learning. Write short notes on (a) Preference Bias (b) Restriction Bias	**[10]**	**1**	**3**
	OR			
Q - 3	What type of problems are best suited for decision tree learning? Explain it with the help of an example.	**[10]**	**2**	**3**
Q - 4	**Attempt any one.**	**[05]**		
(i)	Explain the concept of a Perceptron with a neat diagram.		**1**	**2**
(ii)	Under what conditions the perceptron rule fails and it becomes necessary to apply the delta rule. Discuss.		**2**	**3**

SECTION – II

Q - 1	**Define Following: (Any five)**	**[05]**		
(i)	Sample error		**1**	**1**
(ii)	True error		**1**	**1**
(iii)	Random Variable		**1**	**1**
(iv)	Regression		**1**	**1**
(v)	Residual		**1**	**1**
(vi)	Kernel Function		**1**	**1**
(vii)	Standard Deviation		**1**	**1**
Q - 2 (a)	Explain the k-Means Algorithm with an example.	**[05]**	**1**	**3**
Q - 2 (b)	Explain Brute force Bayes Concept Learning.	**[05]**	**1**	**3**
	OR			

Q - 2 (a)	What are Bayesian Belief nets? Where are they used?	[05]	1	3
Q - 2 (b)	Explain Naïve Bayes Classifier with an Example.	[05]	2	3
Q - 3	Discuss the major drawbacks of K-nearest Neighbour learning Algorithm and how it can be corrected.	[10]	2	3

OR

Q - 3 (a)	Discuss Maximum Likelihood and Least Square Error Hypothesis.	[05]	2	3
Q - 3 (b)	Describe Maximum Likelihood Hypothesis for predicting probabilities.	[05]	1	3
Q - 4	**Attempt any one**	[05]		
(i)	Describe K-nearest Neighbour learning Algorithm for continues valued target function.		1	3
(ii)	Explain the K – nearest neighbour algorithm for approximating a discrete – valued function f : Hn→ V with pseudo code .		1	3

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CO: Course Outcome Number BTL: Blooms Taxonomy Level

Level of Bloom's Revised Taxonomy in Assessment

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create