Reg. No.												

Question Paper Code	12178

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

Seventh Semester

Computer Science and Engineering

20CSPC702 - MACHINE LEARNING TECHNIQUES

(Regulations 2020)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	Point out applications of machine learning.	*2,K1,CO1*
2.	Classify positive and negative examples for the target concept.	*2,K1,CO1*
3.	Give the equations for Entropy and Information Gain in ID3.	*2,K2,CO2*
4.	State the inductive Learning Hypothesis.	*2,K2,CO2*
5.	Distinguish between crossover and mutation.	*2,K2,CO3*
6.	State the concept of ANN.	*2,K1,CO3*
7.	Define Bayes Theorem.	*2,K1,CO4*
8.	Give the formula for probability density function.	*2,K2,CO4*
9.	Give the advantages of instance –based methods.	*2,K2,CO5*
10.	Distinguish between lazy versus eager learning.	*2,K2,CO5*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Discuss the perspectives and issues in Machine Learning.	*13,K2,CO1*
		OR	
	b)	Remember the three features to have a well-defined learning problem for the following (i) A checkers learning problem. (ii) A handwritten recognition learning problem. (iii) A robot driving learning problem.	*13,K2,CO1*
12.	a)	Discuss in detail the Candidate–Elimination Algorithm with an example.	*13,K2,CO2*
		OR	
	b)	Demonstrate the basic decision tree algorithm.	*13,K2,CO2*

13. a) Analyze the multi-layer perceptron model with a neat diagram. *13,K3,CO3*

OR

b) (i) Point out about the common operators for Genetic algorithms. *7,K1,CO3*

(ii) State about the various crossovers with diagrams. *6,K1,CO3*

14. a) Illustrate with an example why Gibbs Algorithm is better than the Bayes Optimal classifier. *13,K3,CO4*

OR

b) Explain maximum likelihood algorithm. *13,K1,CO4*

15. a) (i) Illustrate the disadvantages of Instance –based methods. *7,K3,CO5*
(ii) Examine the k-nearest learning algorithm. *7,K2,CO5*

OR

b) (i) Point out about the Sequential Covering Algorithm. *7,K1,CO5*
(ii) Explain the Learn one rule in one example. *6,K1,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Elaborate on Q functions, algorithm for Q learning in reinforcement learning. *15,K2,CO6*

OR

b) Nowadays, data stored in medical databases are growing in an increasingly rapid way. Analyzing the data is crucial for medical decision making and management. There is a huge requirement for the support of specific knowledge-based problem solving activities through the analysis of patients raw data collected during diagnosis. There is an increasing demand for discovery of new knowledge to be extracted by the analysis of representative collections of example cases, described by symbolic or numeric descriptors. Explain how machine learning can deal with the problem of finding interesting regulatory and patterns in data for the above scenario. Choose an appropriate model and explain for the applications. *15,K3,CO6*