R20 Regulation *Subject code: 3P5GD*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech V Semester Supplementary Examinations, July 2024

INTRODUCTION TO MACHINE LEARNING

(CSE (AI & ML))

Maximum Marks: 70 Date:26.07.2024 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

	Part-A	CO	Bloom Tx
All the following questions carry equal marks (10X2M=20 Marks)			
1	Define well-posed learning problems in the context of machine learning.	CO1	2
2	Write the process of designing a learning system.	CO1	2
3	Write the concept of inductive bias in decision tree learning.	CO2	2
4	Differentiate between feedforward and recurrent neural networks..	CO2	2
5	Write the principles of the Naïve Bayes classifier	CO3	2
6	Write the concept of sample complexity in Computational Learning?	CO3	2
7	What is the Sequential Covering Algorithms	CO4	2
8	Define Analytical Learning.	CO4	2
9	What is the combining inductive?	CO5	2
10	Write the advantages of Q Learning algorithm?	CO5	2
	Part-B		
Answer All the following questions. (5X10M=50Marks)			Bloom Tx level
11	Explain about Find-S algorithm with an example. [10]	CO1	5
	OR		
12	Apply the candidate elimination algorithm to a concept learning task. Discuss the steps involved and analyze how the algorithm refines the hypothesis space. [10]	CO1	3,4
13	Explain about decision tree learning algorithms. Discuss the impact on the decision-making process and the interpretability of the resulting tree. [10]	CO2	4
	OR		
14	Evaluate the role of back propagation in training multilayer neural networks. Discuss the challenges and trade-offs involved in choosing network architectures. [10]	CO2	5
15	Apply the Bayesian approach to concept learning, considering different priors and likelihoods. Discuss how different choices impact the final learned hypotheses. [10]	CO3	4
	OR		

16	Explain about K-nearest neighbor learning with an example. [10]	CO3	5
17	Apply the FOIL algorithm to learn sets of first-order rules from examples. Discuss how FOIL handles the trade-off between specificity and coverage. [10]	CO4	4
	OR		
18	Evaluate the effectiveness of Explanation-Based Learning (EBL) in discovering new features. Discuss the challenges and opportunities associated with incorporating domain knowledge into the learning process. [10]	CO4	5
19	Apply reinforcement learning to a simulated environment and discuss the ethical considerations associated with deploying learning systems in real-world scenarios. [10]	CO5	4
	OR		
20	Evaluate the differences between lazy and eager learning approaches in instance-based learning. Discuss scenarios where each approach is preferable and the impact on computational efficiency. [10]	CO5	5