R20 Regulation *Subject code: 3E8FC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VIII Semester Supplementary Examinations, November 2025

MACHINE LEARNING

(IT)

Maximum Marks: 70 Date: 27.11.2025 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 which carries 10M.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20 Marks)		Marks	CO	Bloom Tx
1	Define well-posed learning problem with an example.	2M	1	Understand
2	What is inductive bias in concept learning?	2M	1	Understand
3	State the basic structure of a perceptron.	2M	2	Understand
4	What are appropriate problems for decision tree learning?	2M	2	Understand
5	State the principle behind the Bayes theorem.	2M	3	Understand
6	Differentiate between Lazy and Eager learning.	2M	3	Understand
7	What is FOIL algorithm used for in rule learning?	2M	4	Understand
8	Mention any two uses of Explanation-Based Learning.	2M	4	Understand
9	Define Q-Learning and its objective.	2M	5	Understand
10	List any two advantages of combining inductive and analytical learning.	2M	5	Understand

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
11	a) Describe the concept learning task and how it is approached through Find-S algorithm. b) Discuss version spaces and the Candidate Elimination algorithm.	5M 5M	1	Understand
	OR			
12	Explain the issues in machine learning and the design of a learning system.	10M	1	Understand
13	a) Illustrate the decision tree learning algorithm with an example. b) Explain inductive bias in decision tree learning.	5M 5M	2	Understand
	OR			
14	Describe the backpropagation algorithm and discuss its use in multilayer networks.	10M	2	Understand
15	a) Explain Bayes Optimal Classifier with an example. b) Describe the k-Nearest Neighbour learning approach.	5M 5M	3	Understand

	OR			
16	Discuss the NavieBayesian Classifier and the Minimum Description Length principle.	10M	3	Understand
17	a) What are Sequential Covering Algorithms? Explain with an example. b) Describe the Prolog-EBG algorithm and its applications.	5M 5M	4	Understand
	OR			
18	Explain how new features can be discovered using analytical learning.	10M	4	Understand
19	a) Discuss Inductive-Analytical approaches to learning. b) Explain the Reinforcement learning task and Q-Learning mechanism.	5M 5M	5	Understand
	OR			
20	Design an experiment combining inductive and analytical learning methods for classification.	10M	5	Understand