



R22 Regulation **Subject code: 4E5GD&4E5HB**
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
 (Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech V Semester Regular Examinations, December 2024
MACHINE LEARNING
 (Common to CSE(AI&ML)) & CSE(DS))

Maximum Marks: 60

Date: 31.12.2024

Duration: 3 hours

- Note:**
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 10 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 (10X1M=10 Marks)																																											
1.a)	What is supervised learning, and how does it differ from unsupervised learning?	1	2																																								
b)	List the basic design issues to machine learning.	1	1																																								
c)	State version space.	2	1																																								
d)	What is the perceptron?	2	2																																								
e)	Define Boosting.	3	1																																								
f)	State Bayes theorem.	3	1																																								
g)	Define LDA.	4	2																																								
h)	Define PCA.	4	1																																								
i)	What factors contribute to the popularity of genetic algorithm?	5	2																																								
j)	What is Reinforcement learning?	5	2																																								
Part-B																																											
Answer All the following questions. (5X10M=50Marks)		CO	Bloom Tx																																								
2	Apply Find's algorithm with suitable example. [10M]	1	3																																								
OR																																											
3	Write candidate elimination algorithm. Apply the algorithm to obtain the version space for the training example. [10M]	1	3																																								
<table><tr><td>Sl. No.</td><td>Sky</td><td>Air temp</td><td>Humidity</td><td>Wind</td><td>Water</td><td>Forecast</td><td>Enjoy</td></tr><tr><td>1</td><td>Sunny</td><td>Warm</td><td>Normal</td><td>Strong</td><td>Warm</td><td>Same</td><td>Yes</td></tr><tr><td>2</td><td>Sunny</td><td>Warm</td><td>High</td><td>Strong</td><td>Warm</td><td>Same</td><td>Yes</td></tr><tr><td>3</td><td>Rainy</td><td>Cold</td><td>High</td><td>Strong</td><td>Warm</td><td>Change</td><td>No</td></tr><tr><td>4</td><td>Sunny</td><td>Warm</td><td>High</td><td>Strong</td><td>Cool</td><td>Change</td><td>Yes</td></tr></table>		Sl. No.	Sky	Air temp	Humidity	Wind	Water	Forecast	Enjoy	1	Sunny	Warm	Normal	Strong	Warm	Same	Yes	2	Sunny	Warm	High	Strong	Warm	Same	Yes	3	Rainy	Cold	High	Strong	Warm	Change	No	4	Sunny	Warm	High	Strong	Cool	Change	Yes		
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4	What are the key differences and similarities between radial basis functions and spline functions in terms of their applications in interpolation and function approximation? [10M]	2	3																																								
OR																																											
5	a) Illustrate multi-layer perceptron in detail. [7M] b) Explain the features of Bayesian learning methods. [3M]	2	3																																								
6	How do decision trees work in the context of supervised learning? [10M]	3	3																																								

	OR		
7	Apply ensemble learning techniques in machine learning. [10M]	3	3
8	Apply dimensionality reduction techniques in machine learning. [10M]	4	3
	OR		
9	Discuss the representation of hypotheses and genetic algorithms used in this. [10M]	4	3
10	Apply MCMC methods in Reinforcement learning. [10M]	5	3
	OR		
11	Explain hidden Markov models in Reinforcement learning. [10M]	5	3