PAPER ID-310858

Roll No:

BTECH
(SEM V) THEORY EXAMINATION 2025-26
MACHINE LEARNING TECHNIQUES

TIME: 3 HRS **M.MARKS: 70**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt *all* questions in brief. **02 x 7 = 14**

Q no.	Question	CO	Level
a.	Define Machine Learning.	CO1	K1
b.	What is a well-defined learning problem?	CO1	K2
c.	State any two applications of Logistic Regression.	CO2	K2
d.	What is Entropy in Decision Tree Learning?	CO3	K2
e.	Define Support Vector Machine (SVM).	CO2	K1
f.	What is backpropagation in neural networks?	CO4	K2
g.	What is Q-learning?	CO5	K2

SECTION B

2. Attempt any *three* of the following: **07 x 3 = 21**

a.	Explain types of learning in Machine Learning with suitable examples.	CO1	K2
b.	Describe Linear Regression and its assumptions.	CO2	K3
c.	Explain Naïve Bayes classifier with an example.	CO2	K3
d.	Discuss the properties and issues of Support Vector Machines.	CO3	K3
e.	Explain k-Nearest Neighbour (k-NN) algorithm and its limitations.	CO3	K3

SECTION C

3. Attempt any *one* part of the following: **07 x 1 = 07**

a.	Explain the ID3 algorithm for Decision Tree learning.	CO3	K3
b.	Discuss inductive bias and inductive inference in decision trees.	CO3	K4

4. Attempt any *one* part of the following: **07 x 1 = 07**

a.	Explain perceptron and multilayer perceptron with neat diagram.	CO4	K3
b.	Derive the Backpropagation algorithm for training neural networks.	CO4	K4

5. Attempt any *one* part of the following: **07 x 1 = 07**

a.	Explain the architecture of Convolutional Neural Networks (CNN).	CO4	K4
b.	Discuss applications of Deep Learning with suitable case studies.	CO3	K5

6. Attempt any *one* part of the following: **07 x 1 = 07**

a.	Explain Reinforcement Learning with Markov Decision Process.	CO5	K4
b.	Describe Q-Learning algorithm and its applications.	CO5	K4

7. Attempt any *one* part of the following: **07 x 1 = 07**

a.	Explain Genetic Algorithm cycle with suitable example.	CO5	K4