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MTECH
(SEM II) THEORY EXAMINATION 2021-22
MACHINE LEARNING

Time: 3 Hours**Total Marks: 70****Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief.****2 x 7 = 14**

Q no.	Question	CO
a.	List down at least five applications of machine learning.	1
b.	Explain the term machine learning.	1
c.	Differentiate between Training data and Testing Data.	2
d.	What are the issues in Machine Learning.	2
e.	Differentiate between Supervised and Unsupervised learning.	3
f.	Explain the term linear regression.	4
g.	List the issues in Decision Tree Learning.	5

SECTION B**2. Attempt any three of the following:****7x3=21**

Q no.	Question	CO
a.	Explain the various stages involved in designing a learning system.	1
b.	Relate Inductive bias with respect to Decision tree learning.	2
c.	Explain the concept of Bayes theorem with an example.	3
d.	Discuss the major drawbacks of K-nearest Neighbour learning Algorithm and how it can be corrected?	4
e.	What are the Genetic operators? What are the role of Genetic operators in Genetic algorithm?	5

SECTION C**3. Attempt any one part of the following:****7x1=7**

Q no.	Question	CO
a.	How is Candidate Elimination algorithm different from Find-S Algorithm? Explain with suitable example.	1
b.	Explain the List Then Eliminate Algorithm with an example.	1

4. Attempt any one part of the following:**7x1=7**

Q no.	Question	CO
a.	What are the type of problems in which Artificial Neural Network can be applied?	2
b.	Derive the Backpropagation rule considering the training rule for Output Unit weights and Training Rule for Hidden Unit weights?	2

5. Attempt any one part of the following:**7x1=7**

Q no.	Question	CO
a.	Explain Bayesian belief network and conditional independence with example.	3
b.	Explain the k-Means Algorithm with an example.	3

6. Attempt any one part of the following:**7x1=7**

Q no.	Question	CO
a.	Explain Locally Weighted Linear Regression.	4
b.	Define the following terms a. Sample error b. True error c. Random Variable d. Expected value e. Variance	4

7. Attempt any one part of the following:**7x1=7**

Q no.	Question	CO
a.	Name and Describe the main features of Genetic Algorithm with proper diagram.	5
b.	Explain the Q function and Q Learning Algorithm.	5