

Code No.: CY701PC/DS701PC

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CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
IV-B.TECH-I-Semester End Examinations (Supply) - April- 2024
MACHINE LEARNING
(Common for CSD, CSC)

[Time: 3 Hours]

[Max. Marks: 70]

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

(20 Marks)

1. a) What is well- posed learning problems? [2M]
- b) Define Decision tree learning. [2M]
- c) State the concept of Artificial neural network. [2M]
- d) List out the characteristics to which the back propagation algorithm is used. [2M]
- e) What are instance based learning? [2M]
- f) Define Bayes Theorem. [2M]
- g) Define Hypothesis space search. [2M]
- h) What is Reinforcement learning? [2M]
- i) Differentiate the Inductive and Analytical Learning? [2M]
- j) What are different ways to incorporate prior knowledge in ML algorithms? [2M]

PART-B

(50 Marks)

2. Explain in detail the Inductive Bias of Candidate Elimination algorithm. [10M]

OR

3. Consider the following set of training examples. [10M]

- a) What is the entropy of this collection of training example with respect to the target function classification?
- b) What is the information gain of a_2 relative to these training examples?

Instance	Classification	a_1	a_2
1	+	T	T
2	+	T	T
3	-	T	F
4	+	F	F
5	-	F	T
6	-	F	T

4. Explain the Multi-Layer Perceptron model with a neat diagram. [10M]

OR

- 5.a) Summarize the derivation of the Back Propagation Algorithm. [5M]

- b) Explain in detail about the Gradient Descent algorithm. [5M]

6. Explain the concept of EM Algorithm. Discuss what are Gaussian Mixtures. [10M]

OR

- 7.a) Illustrate the disadvantages of Instance –based methods. [5M]

- b) Examine the k-nearest neighbor learning algorithm. [5M]

8. Discuss in detail Learning First-order rules. [10M]
OR
- 9.a) Discuss about Genetic algorithm steps with example. [5M]
b) Illustrate the prototypical genetic algorithm. [5M]
10. Illustrate about the explanation-based learning algorithm PROLOG-EBG. [10M]
OR
11. Discuss about Hypothesis Space Search. Demonstrate the Using Prior Knowledge to Initialize the Hypothesis. [10M]
