

Code No.: CS602PC

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CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
III-B.TECH-II-Semester End Examinations (Supply) - January- 2024
MACHINE LEARNING
(Common for CSE, CSM)

[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) Interpret checkers game as well posed learning problem. [2M]
- b) State the version space representation. [2M]
- c) Write about sampling theory. [2M]
- d) Discuss any four applications of artificial neural networks. [2M]
- e) State Bayes theorem. [2M]
- f) Describe instance based learning. [2M]
- g) Explain genetic programming. [2M]
- h) Illustrate reinforcement learning with an example. [2M]
- i) Write about control knowledge. [2M]
- j) Explain the importance of inductive bias in explanation based learning. [2M]

PART-B **(50 Marks)**

- 2.a) Explain the Perspectives and issues in machine learning. [5M]
- b) Demonstrate general to specific learning with example. [5M]
- OR**
- 3.a) Discuss Version spaces and the candidate elimination algorithm with example. [5M]
- b) Illustrate the impact of overfitting in a typical application of decision tree learning. [5M]
- 4.a) Define perceptron. Explain the representation of the perceptron and its training rule. [6M]
- b) Discuss derivation of back propagation rule. [4M]
- OR**
- 5. Explain the terms i) Sample complexity ii) Computational Complexity iii) Mistake Bound iv) Demonstrate the error of a hypothesis. [10M]
- 6.a) Differentiate between sample complexity of finite and infinite Hypothesis. [6M]
- b) Interpret PAC Learnability. [4M]
- OR**
- 7.a) Differentiate between K- nearest neighbor and distance weighted nearest neighbor learning. [6M]
- b) Discuss radial bias function with a suitable example. [4M]
- 8. Explain genetic operators with an example and demonstrate genetic algorithm. [10M]
- OR**
- 9.a) Elaborate Q function and algorithm for Q-learning. [5M]
- b) Discuss briefly temporal difference learning. [5M]
- 10. Explain about PROLOG-EBG in detail. [10M]
- OR**
- 11.a) Explain how to initialize the hypothesis by using prior knowledge. [5M]
- b) Differentiate between inductive learning and analytical learning approaches. [5M]
