

Code No.: IT602PC

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**CMR ENGINEERING COLLEGE : HYDERABAD**

**UGC AUTONOMOUS**

**III-B.TECH-II-Semester End Examinations (Supply) - January- 2024**

**INTRODUCTION TO MACHINE LEARNING**

**( IT )**

**[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) Define hypothesis space search in decision tree learning. [2M]
- b) What candidate elimination algorithm will do? [2M]
- c) Why multilayer networks preferred the certain problems? [2M]
- d) What are some remarks on the Back-Propagation algorithm? [2M]
- e) What is the principle of behind locally weighted regression? [2M]
- f) What is the core idea behind computational learning theory? [2M]
- g) Compare and construct between the genetic Programming and genetic algorithm. [2M]
- h) Recall the main components of sequential covering algorithm. [2M]
- i) What is the purpose of augmenting search operators? [2M]
- j) Summarize the Explanation-Based Learning (EBL) of search control knowledge. [2M]

**PART-B**

**(50 Marks)**

- 2.a) Explain the relationship between concept learning and the general-to-specific ordering. [5M]
  - b) Apply the hypothesis space search in decision tree learning to solve a problem. [5M]
- OR**
- 3.a) What are the problems has suitable in decision trees? [5M]
  - b) Apply the find-S algorithm to a concept learning task. [5M]
- 4.a) What are the importances of estimating hypothesis accuracy? [5M]
  - b) Analyze the ethical considerations in face recognition. [5M]
- OR**
- 5.a) Apply the Back-Propagation algorithm to optimize a neural network. [5M]
  - b) How to do perceptions contribute to learning? [5M]
- 6.a) Differentiate between Maximum Likelihood and least squared error hypotheses. [5M]
  - b) Determine the mistake bound in a model of learning. [5M]
- OR**
- 7.a) What are the radial basis functions in instance-based learning? [5M]
  - b) Implement the Gibbs algorithm for Bayesian learning. [5M]
- 8.a) Describe the models of evolution and learning in the context of genetic algorithms. [5M]
  - b) Apply the concept of induction as inverted deduction in a rule-based system. [5M]
- OR**
- 9.a) Apply the Q-learning to solve a specific reinforcement learning problem. [5M]
  - b) Briefly explain the learning sets of First-Order rules. [5M]
- 10.a) Describe the relationship between prior knowledge and search objective. [5M]
  - b) Analyze the trade-offs between inductive and analytical learning techniques. [5M]
- OR**
- 11.a) Design a learning system concepts to use the Analytical Learning-2. [5M]
  - b) Evaluate the PROLOG-EBG in complex domains. [5M]

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