

R18

Code No: M157AB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, January/February - 2023

MACHINE LEARNING

(Minor Program in Artificial Intelligence and Machine Learning)

Time: 3 Hours

Max.Marks:75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

- 1.a) What is Machine learning? [2]
- b) Explain about version spaces and its remarks. [3]
- c) What is perceptron? Explain. [2]
- d) How to estimate hypothesis accuracy? [3]
- e) What radial basis function? Explain. [2]
- f) State Baye's theorem. [3]
- g) Explain about FOIL. [2]
- h) Explain about reinforcement learning. [3]
- i) What is inductive learning? [2]
- j) Write remarks about explanation based learning. [3]

PART – B

(50 Marks)

- 2.a) Illustrate any four examples for Well-Posed problems.
- b) Explain the decision tree representation for a learning problem. [5+5]

OR

- 3.a) Explain different perspectives and issues in machine learning.
- b) Describe the candidate elimination algorithm and its limitations. [5+5]

- 4.a) What are the appropriate problems for neural network learning? Discuss.
- b) Describe the general approach for deriving confidence intervals. [5+5]

OR

- 5.a) Explain Back-Propagation algorithm with an illustrative example.
- b) Compare and contrast various learning algorithms. [5+5]

- 6.a) State and explain the Minimum Description Length Principle.
- b) Illustrate K-Nearest Neighbor learning and classification. [5+5]

OR

- 7.a) Explain about the maximum likelihood hypothesis for predicting probabilities in Bayesian learning.
- b) Discuss about the Gib's algorithm in detail. [5+5]

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- 8.a) Represent the learning first order rules in a rule induction algorithm.
- b) Explain Hypothesis space search in genetic algorithms.

[5+5]

OR

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- 9.a) Write the sequential covering algorithm for learning disjunctive set of rules.
- b) Demonstrate the use of genetic algorithm with example.

[5+5]

- 10.a) Discuss Explanation-Based learning of search control knowledge.
- b) What are the inductive-analytical approaches to learning? Explain.

[5+5]

OR

- 11.a) Illustrate about using prior knowledge to alter the search objectives.
- b) Discuss about PROLOG-EBG with a suitable example.

[5+5]

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