

Code No: 156BN

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year II Semester Examinations, August/September - 2024****MACHINE LEARNING****(Computer Science and Design)****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) Why Machine learning is important? [2]
- b) Distinguish supervised learning vs unsupervised learning. [3]
- c) What is perceptron? [2]
- d) Define Delta Rule. [3]
- e) Define Bayesian theorem. [2]
- f) What are benefits of K- NN algorithm? [3]
- g) What is Reinforcement Learning? [2]
- h) What is a fitness function and its need in GA? [3]
- i) What is explanation based learning? [2]
- j) What is search control knowledge? [3]

**PART – B****(50 Marks)**

- 2.a) What do you mean by a well –posed learning problem? Explain the important features that are required to well –define a learning problem.
- b) How is Candidate Elimination algorithm different from Find-S Algorithm? [5+5]

**OR**

- 3.a) Explain the various stages involved in designing a Learning system.
- b) Discuss Entropy in ID3 algorithm with an example. [5+5]

- 4.a) What are the different types of problems in which Artificial Neural Network can be applied?
- b) Discuss the method of comparing two algorithms. [5+5]

**OR**

5. Write the algorithm for Back propagation. Illustrate with an example. [10]

- 6.a) What are Bayesian Belief nets? Where are they used?
- b) What are instance based learning? Explain key features and disadvantages of these methods. [5+5]

**OR**

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

- 8.a) Explain the crossover and mutation in the context of GA.  
b) Write in detail Sequential –Covering algorithm. [5+5]
- OR**
- 9.a) Demonstrate about induction as inverted deduction.  
b) Assess the parallelizing Genetic Algorithms. [5+5]
10. Identify any training with example for PROLOG EBG. [10]
- OR**
11. Discuss about the Analytical learning model with example. [10]

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Used paper Aug-2024