

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2016

MACHINE LEARNING

(Computer Science and Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 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

(25 Marks)

1. a) What is meant by Target function of a learning program? [2]
- b) What is the need of machine learning in this era? [3]
- c) State Occam's razor principle. [2]
- d) What is the role of Information gain in decision tree learning? [3]
- e) Define sample error. [2]
- f) What is the use of jackknifing approach? [3]
- g) List any four eager learner algorithms. [2]
- h) What are the merits and demerits of lazy learners? [3]
- i) State Baldwin effect. [2]
- j) Give an example for fitness function in genetic algorithms. [3]

PART-B

(50 Marks)

2. a) What are the theoretical limits of learnability?
 - b) How does number of training examples influence accuracy? [5+5]
- OR**
3. Describe hypothesis space search by Find-S algorithm. [10]
 4. Illustrate top-down induction of decision trees. [10]
- OR**
5. a) Discuss the decision surface of perceptron.
 - b) Explain expressive capabilities of artificial neural networks [5+5]
 6. Present Hidden Markov Model as the simplest dynamic Bayesian network. Quote suitable example to support your discussion. [10]
- OR**
7. Define Vapnik-Chervonenkis dimension. How does it help in dealing with sample complexity? [10]
 8. Which algorithm is the most basic instance-based method? Explain its advantages and disadvantages. [10]
- OR**
9. Explain how does the CADET system employ case based reasoning to assist in the conceptual design of simple mechanical devices. [10]
 10. How to create or generate new offspring from the given population for genetic algorithm? Illustrate. [10]
- OR**
11. a) "Explanation determines feature relevance." Substantiate this statement with respect to explanation based learning.
 - b) Discuss Prolog-EBG with within. [5+5]