

CE1.2-R4: MACHINE LEARNING

NOTE:

1. Answer question 1 and any FOUR from questions 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 100

1.

- a) How does a cross validation play an important role in Learning?
- b) Briefly explain the learning steps of Naive Bayes learning algorithm.
- c) How can the learning algorithm by statistical hypothesis testing be evolved?
- d) Elaborate the use of Learning Rate. How learning rate improve the Neural Network learning?
- e) How can decision trees be translated into rules using machine learning approach?
- f) How does an inverse resolution play the important role in Rule Learning?
- g) Differentiate: Generative Training vs. Discriminative Training.

(7x4)

2.

- a) What is Ensemble classifier? How does active learning play the important role with ensembles?
- b) Explain architecture of Artificial Neural Network.
- c) Explain heuristic rule induction using Information Gain.
- d) What is Back-Propagation in Neural network? What are the advantages of using Back propagation?

(5+5+4+4)

3.

- a) How inductive classification is different from normal classification? Write simple steps of Candidate Elimination Algorithm.
- b) How recurrent network is different from the feed forward network? Discuss briefly.
- c) How bias and variance dilemma are related to each other in Neural Network?

(6+6+6)

4.

- a) What is Perceptrons? Describe the various activation functions that are employed in Neural Network. Compare their merits and demerits.
- b) Characterize the terms: Classification, Learning, Bias, and Perceptrons.
- c) Draw the architecture of Multilayer Perceptrons. Briefly mention the execution steps of Neural Network Learning.
- d) Why is it required to generate a rule? Briefly describe the Bayes Learning.

(6+4+5+3)

5.

- a) How does bias play an important role in classification? Write the importance of inductive bias in classification.
- b) How can the accuracy of learned hypothesis be measured?
- c) Briefly mention the application domain, where Artificial Neural Network can be used.
- d) Define Machine Learning. Briefly mention the Goals and application of Machine Learning

(4+6+4+4)

6.

- a) What is significance of maximum margin linear separators in support vector machine?
- b) What are horn clauses? Convert following sentences in First Order Predicate logic.
 - i) Everyone is loyal to someone
 - ii) All men are mortal
- c) Why regression is required in Classification Techniques?
- d) Differentiate: Competitive Learning and Supervised Learning.

(6+4+4+4)

7.

- a) What is the importance of using parameter smoothing in Bayesian Learning?
- b) How does neural network related to statistical methods? Explain briefly.
- c) How can dependency be represented by Markov net method?
- d) What is over fitting? How can it be resolved in Learning of Neural Network?

(4+6+4+4)