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14SCS41

**Fourth emester M.Tech. Degree Examination, Dec.2016/Jan.2017**  
**Machine Learning Techniques**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions.**

- 1 a. Define machine learning and discuss various issues in machine learning. (10 Marks)  
b. List and explain the different design issues and approaches in machine learning. (10 Marks)
- 2 a. Illustrate with suitable example the candidate elimination algorithm. (10 Marks)  
b. What is decision tree learning? Illustrate ID3 algorithm for simplified version with Boolean valued functions. (10 Marks)
- 3 a. What are artificial neural networks (ANN). Discuss the different characteristics that are appropriate for ANN problems. (10 Marks)  
b. What is perceptron? Discuss, how a single perceptron can be used to represent the Boolean functions such as AND, OR (10 Marks)
- 4 a. Write a note on :  
i) Perceptron training rule ii) Gradient descent and delta rule. (10 Marks)  
b. Explain stochastic approximation to gradient descent of back propagation algorithm for feed forward network containing two layers of sigmoideal units. (10 Marks)
- 5 a. Explain the common operators for Genetic algorithm with an example. (10 Marks)  
b. What is Bayesian learning? Discuss the features of Baysian learning methods. (10 Marks)
- 6 a. Write a short note on :  
i) Baye's optimal classifies ii) Gibbs algorithm. (10 Marks)  
b. Briefly explain the mistake bound models of learning. (10 Marks)
- 7 a. What are instance based methods? Explain the key features and disadvantages of these methods. (10 Marks)  
b. Explain the K – nearest neighbor algorithm for approximating a discrete – valued function  $f: H^n \rightarrow V$  with pseudo code. (10 Marks)
- 8 a. Compare the purely analytical and purely inductive learning methods. (04 Marks)  
b. Write a note on FOIL algorithm. (08 Marks)  
c. What is Q learning explain Q learning algorithm assuming deterministic rewards and actions? (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any remaining identification, appear to evaluate, and no equations written eg. 12, 3, 50, will be treated as unpractices.