7E4173

B.Tech. VII Semester (Main/Back) Examination - 2013
Electrical Engg.
7EE3 Artificial Intelligence Techniques

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)

Unit - I

1. a) Explain why Artificial Intelligence is beneficial even though computers cannot really think. How is it different from the conventional computer systems? **(8)**

   b) What are the major factor's that can help push Artificial Intelligence from the laboratory to the real world. **(8)**

OR

1. a) How do Expert Systems differ from conventional programs? Discuss the various stages of knowledge acquisition in Expert Systems. **(8)**

   b) What are the various expert system tools? Differentiate between a shell and a tool. **(8)**

Unit - II

2. a) Define and describe the difference between knowledge, belief, hypothesis and data. **(6)**

   b) Describe the various Logic Representation schemes used to frame knowledge-based programs or Rule-based-expert systems. **(10)**

OR

2. a) What is Heuristic search? Explain the Admissible Heuristic algorithm with the help of a suitable example. **(8)**

   b) What do understand by Depth First search? Explain the DFS algorithm with a suitable example. Also explain the term complexity of DFS. **(8)**

Unit - III

3. a) Compare the performance of a computer and that of a biological neural network in terms of speed of processing, size and complexity, storage, fault tolerance and control mechanism. **(8)**

   b) What do you understand by single layer and multilayer perception? Discuss perception training algorithms in brief. **(8)**

OR

3. a) Explain the basic principal and some recent trends in Artificial Neural Networks. **(8)**

   b) Explain briefly the terms cell body, axon, synapse, dendride and neuron with reference to a biological neural network and explain how it can be used for Artificial Neural Network. **(8)**

Unit - IV

4. a) Compare and contrast between supervised and unsupervised learning in connection with Artificial Neural Network. Identify supervised and unsupervised basic learning laws. **(8)**

   b) Explain the Kohonen's Algorithm and its application in Artificial Neural Networks. **(8)**

OR

4. a) What are the basic features for the derivation of Back propagation Algorithm in Input, Output and Hidden layers? **(8)**

   b) Derive the back propagation algorithm along with the proper expressions and block diagram. **(8)**

Unit - V

5. a) Explain Fuzzy logic using the concepts of its existence in the real world. **(8)**

   b) What do you understand by the fuzzy set. Differentiate it from the conventional set theory. **(8)**

OR

   a) What are the basic organizations for a genetic algorithm. **(8)**

   b) Define the membership function of fuzzy set using appropriate examples. Also describe the basic terms and conditions for it. **(8)**