

7E4173

Roll No. : _____

Total Printed Pages : **2**

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B. Tech. (Sem. VII) (Main) Examination, January - 2010
Electrical Engineering
(7EE 3 Artificial Intelligence Techniques)

Time : 3 Hours]

[Total Marks : 80
[Min. Passing Marks : 24

*Attempt overall five questions. All questions carry equal marks.
(Schematic diagrams must be shown wherever necessary. Any data
you feel missing may suitably be assumed and stated clearly. Units
quantities used / calculated must be stated clearly)*

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. _____ Nil _____ 2. _____ Nil _____

- 1 (a) Explain different types of artificial network architectures. 8
(b) Name various types of expert systems and explain one of them in detail. 8

OR

- 1 (a) Sketch the architecture of an expert system, show the major components and interrelationships between these components. 8
(b) Define artificial intelligence. Discuss the areas in which applications of AI are used. 8

- 2 (a) Write a recursive algorithm to implement depth first search. 8
(b) Explain the difference between forward and backward chaining and under what conditions each would be best to use. 8

OR

- 2 (a) What are the approaches to knowledge representation and various issues in knowledge representation. 8
- (b) Explain hill climbing method of searching. 8
- 3 (a) Explain the structure of a biological neural network. 8
- (b) Explain the functioning of perception as a pattern classifier. 8

OR

- 3 (a) Explain various properties of artificial neural networks. 8
- (b) Give a numerical example of a training set that leads to many iterations of the perceptron learning algorithm. 8
- 4 (a) What is unsupervised learning ? 8
- (b) Explain how a multilayer network can be trained using back propagation algorithm 8

OR

- 4 (a) What is supervised learning ? What is the difference between supervised and unsupervised learning ? 8
- (b) Explain Kohonen's topfield network. 8
- 5 (a) What are the various methods of defuzzification ? Discuss sampling method of defuzzification. 8
- (b) What is genetic algorithm ? How it works ? 8

OR

- 5 (a) Write short notes on reproduction, crossover and mutation. 8
- (b) What are membership functions ? Explain with the help of an example. 8