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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(ECE) (2011 Batch E-II) (Sem.-7, 8)

**ARTIFICIAL INTELLIGENCE TECHNIQUES & APPLICATIONS**

Subject Code : BTEC-911

Paper ID : [A3005]

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A****1. Answer briefly :**

- a) List various applications of Fuzzy Logic.
- b) Explain the term feedback network.
- c) Distinguish between Short term and Long term Memory.
- d) What is meant by operating range of neuron?
- e) List the three basic neurons which are used to develop complex ANN.
- f) Write a Short note on Hopfield model.
- g) List the role of hidden layers in a multilayer FeedForward network.
- h) List some applications of ANN.
- i) Write a short note on Trapezoidal Membership function.
- j) Write a short note on Fuzzy sets.

### SECTION-B

2. Draw the architecture of multilayer feedforward network.
3. Differentiate between feedforward and feedback Neural Network.
4. Distinguish between Supervised and Unsupervised Learning.
5. List various defuzzification methods.
6. Explain various operations on Fuzzy Sets.

### SECTION-C

7. Find final weights of a single layer network after three steps of Hebbian learning with bipolar binary neuron used having initial weight vector  $w = [1 \ -1 \ 0 \ 0.5]$  needs to be trained using the set of three input vectors as below for an arbitrary choice of learning constant  $=1$ . The transposed inputs are :

$$X1 = [1 \ -2 \ 1.5 \ 0]$$

$$X2 = [1 \ -0.5 \ -2 \ -1.5]$$

$$X3 = [0 \ 1 \ -1 \ 1.5]$$

8. Explain a FKBC architecture.
9. Explain Back propagation training method along with its limitations.