B.Tech. 7th Semester Computer Science Engineering-VIII

Examination December–2013

NEURAL NETWORKS

Paper–CSE-407-F

Time allowed : 3 hours] *[Maximum marks :100*

Note : Question No. 1 is compulsory. Attempt five questions in total selecting one question from each section.

1. (a) Differentiate Supervised and Unsupervised Learning.
   (b) Role of Learning factors
   (c) Bi-directional Associative Memory.
   (d) What are separability limitations? 5×4=20

Section-A

2. What are biological Neurons ? How they help in creating artificial neuron model ? Also discuss the significance of such models. 20

3. (a) Make an arbitrary feed forward network with 3 neurons in input layer, 2 in hidden and 2 in output layer. Explain the concept of Input vector, output vector connection matrix, signal (or activation function). 10

   (b) Describe Hebbian Learning Rule. 10

Section-B

4. (a) What do you mean by discrete perceptron ? Explain the use of discrete perceptron in multi layer perceptron model. 10

   (b) Explain Error back Propagation Training algorithm. 10

5. (a) What are various learning rules for multi-perceptron neural networks ? Explain these learning rules with their equations. 10

   (b) Define the following terms :

   (i) Delta learning rule.

   (ii) Separable pattern classification. 10

Section-C

6. Explain the various architectures of Hopfield network in detail. How learning process occurs in Hopfield network? 20

7. (a) Design a bi-directional Associative memory to Encode the following pattern :

   $A_1 = 100001$ $B_1 = 11000$

   $A_2 = 011000$ $B_2 = 10100$

   $A_3 = 001011$ $B_3 = 01110$

   Check it for A_3 10

Section-D

8. Explain in detail unsupervised learning of clusters. 2

9. Write short note on :

   (i) Winner-take-all

   (ii) Recall Mode 2