Reg. No. : ....

Name : ....

Fifth Semester B.Tech. Degree Examination, November 2013
(2008 Scheme)
08.536 Elective I : ARTIFICIAL NEURAL NETWORKS (TA)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **4** marks.

1. Compare the performance of biological neural network and artificial neural networks.

2. What are the types of learning in ANN ? Explain.

3. What is meant by linear separability ?

4. Draw and explain the architecture of Mc. Cullob Pitts Neuron.

5. State the training algorithm for auto associative neural network.

6. State the Kobonen learning rule.

7. What are the methods of determining the winner-takes-all competition ?

8. Explain Adaptive Resonance Theory (ART).

9. What is the advantages of using momentum factor in back propagation network ?

10. Draw the architecture and explain the Boltzmann machine.   (4×10=40 Marks)

PART – B

Answer **any two** questions from **each** Module. **Each** question carries **10** marks.

Module – I

11. Explain in detail the network architecture, setting the weights and bias and the activation functions for an artificial neural network.   10

12. What is meant by XOR problem ? Apply Hebb rule to the training patterns that defines the XOR function.   10

13. Explain the architecture of adaline network. State the algorithm used for training the adaline network.   10

Module – II

14. Design a Hopfield network for 4 bit bipolar patterns. The training patterns are

    I Sample $S_1 = [1 \quad 1 \quad -1 \quad -1]$

    II Sample $S_2 = [-1 \quad 1 \quad -1 \quad 1]$

    III Sample $S_3 = [-1 \quad -1 \quad -1 \quad 1]$

    Find the weight matrix and energy for the three input samples. Determine the pattern to which the sample $S = [-1 \quad 1 \quad -1 \quad -1]$ associates.   **10**

15. Draw the architecture and explain the training algorithm of a BAM network.   **10**

16. Explain in detail the architecture and application (data compression) of counter propagation network.   **10**
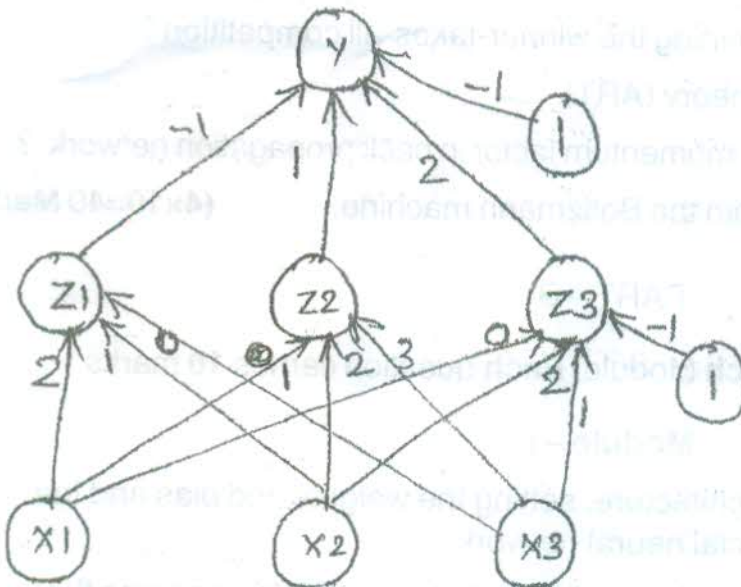
Module – III

17. With the help of architecture, explain the training algorithm of an radial bias function.   **10**

18. Find the new weights when the network given below is presented with the input pattern (1, 1, 0) and target output is 1. Use a learning rate of $\alpha = 0.3$ and binary sigmoid activation function.   **10**

19. Consider the ARTI network with four input units and three cluster units. Determine the updation in weights when vector [1 1 0 1] is the input. Assume vigilance parameter as 0.3.   **10**

(10×6=60 Marks)