(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 2295039 Roll No.

B.TECH

Regular theory Examination (Odd Sem-VII) 2016-17

NEURAL NETWORKS

Time : 3 Hours *Max. Marks : 100*

Note : Question Paper carries three sections. Read the instructions carefully and answer accordingly.

SECTION - A

1. Attempt **all** parts of the questions : **(10×2=20)**

(a) Define artificial neural network. In what ways it is similar to the biological neuron.

b) Give any two application areas, features and limitations of neural networks.

(c) What is self-organizing map(SOM)?

(d) Define activation function, bias and threshold in context of ANN.

(e) How is error back propagated in backpropagation network?

(f) What do you understand by winner-takes-all competition?

(g) State the Kohonen learning rule.

(h) Compare single layer and multilayer neural networks.

(i) List the various types of activation functions used in neural networks.

(j) What do you understand by linearly separable problems? Give any two examples.

SECTION - B

2. Attempt any **five** parts of the question. **(5×10=50)**

(a) Explain the architecture and functioning of a perceptron network.

(b) Generate the AND NOT function with binary data using Adaline network.

(c) What is meant by genetic algorithm? Discuss the various operators involved in genetic algorithm.

(d) Explain the architecture of a back propagation network. What are the limitations of back propagation algorithm?

(e) Discuss in detail the historical development of artificial neural network.

(f) What is simulated annealing? Discuss the method used in simulated annealing.

(g) Derive expression for Boltzmann learning rule.

(h) Write short notes on :

(i) Hebbian rule

(ii) Recurrent network

SECTION - C

Note : Attempt any **two** parts of the question. **(2×15=30)**

3. Explain the McCulloch-Pitts neuron model. Also generate AND function using the model with binary data.

4. Define the term soft computing. How it is different from hard computing? Briefly describe any two application areas where soft computing techniques perform better than hard computing methods.

5. Describe and compare the functioning of a multilayer feedforward neural network and radial basis function network.