2054
B.E. (Electronics and Communication Engineering)
Eighth Semester
EC-810: Neural Networks and Fuzzy Logic

Time allowed: 3 Hours   Max. Marks: 50

NOTE: *Attempt <u>five</u> questions in all, including Question No. which is compulsory and selecting two questions from each Unit. Use standard notations for derivation.*

x-x-x

I.   Attempt the following:-

    a) Define membership function.

    b) List out the different activation functions used in artificial neuron model.

    c) Discuss the functioning of biological neuron.

    d) List out different types of associative memories.

    e) Distinguish Auto associative & Hetero associative memories.

    f) Realize 3-input NAND gate using McCulloch – Pitts model.

    g) List characteristics of artificial neural network.

    h) Define momentum coefficient in back propagation learning.

    i) Give Energy function in BAM.

    j) Give the properties of fuzzy sets.   (10x1)

UNIT - I

II.   a) Explain the basic architecture of McCulloch – Pitts neuron model and also realize 3-input NAND gate using McCulloch – Pitts model.

    b) Explain types of activation function & Neural dynamics.   (6+4)

III. a) Explain unsupervised learning in detail with block diagram.

    b) Discuss different learning mechanisms used in artificial neural networks.   (6+4)

IV.   a) How the hidden layer neurons influence representation of neural network?

    b) Explain how noisy patterns are recognized in auto associative memory with an example.   (2x5)

P.T.O.

UNIT - II

V.   What is vector quantization? Discuss algorithms of ART 2.   (3+7)

VI. Discuss Maxican Hat Networks.   (10)

VII. a) Define membership function.

b) Give various ways of allotting membership functions for fuzzy sets. (7+3)

x-x-x