6E3091

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B. Tech. VI Semester (Main/Back) Exam. May/June, 2013

ELECTRONICS & COMMUNICATION ENGINEERING # 6EC6.0

NEURAL NETWORKS

Time : 3 Hours **Min. Passing Marks : 24** **Maximum Marks : 80**

Instruction to Candidates :

*Attempt any **five** questions, selecting **one** question from **each** unit. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)*

Unit–'I'

1. (*a*) Draw the structure of a biological neuron and develop the artificial neural network from it. **[8]**

   (*b*) What is significance of weight used in artificial neural network? And define the activation function. **[8]**

OR

1. Realize the OR, AND and Ex-OR gate using Mc-Culloch Pit's model of ANN. **[16]**

Unit–'II'

2. Explain the different types of learning and compare them. **[16]**

OR

2. (*a*) Using the Hebb rule, find the weight required to perform classifications: vector (1111) and (-11-1-1) are members of class (with target value 1); vectors (111-1) and (1-1-11) are not members of class (with target value - 1).

   (*b*) Using each of the training X vectors as input, test the response of net. **[16]**

Unit–'III'

3. Develop a perception for the AND function with binary and bipolar targets without bias up to 2 epochs (take first with (0,0) and next without (0,0). **[16]**

OR

3. Compare the operations of the AND gate functions with Hebb's net bipolar inputs and targets using Hebb's net and perception net. **[16]**

Unit–'IV'

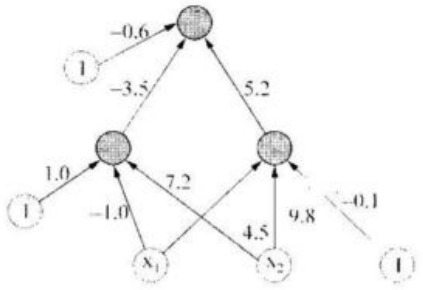
4. Explain Back propagation Rule and architecture of it and training algorithm. **[16]**

OR

4. Explain output representation and decision Rule in detail for multilayer perceptron model. **[16]**

Unit–'V'

5. Generate a neural net using BPN algorithm for XOR logic function. The architecture and values of initial weights and biases are as. **[16]**



OR

5. Explain Kohonen's Self Organizing Feature Map (SOM) and architecture and training algorithm. **[16]**