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BT-8/D-14 **8801**

NEURAL NETWORK AND FUZZY LOGIC

CSE-402

Time : Three Hours] [Maximum Marks : 100

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Derive the delta learning rule for single and multiple output units.

   (b) If the activation function of all hidden units is linear, show that the multilayer perceptron is equivalent to a single layer perceptron.

   (c) Is XOR function linearly separable ? If not, which type of network can be used to solve the problem ?

2. (a) What do you mean by linear separability ? Give example of *two* functions which are linearly separable.

   (b) Differentiate between Single layer and Multilayer neural networks.

Unit II

3. (a) What are the modes of operation of a Hopfield network ? Explain the algorithm for storage of information in a Hopfield network.

   (b) What is continuous Hopfield net ? Write the energy function of Continuous Hop field Network.

4. (a) What are merits and demerits of Back Propagation Algorithm ? What are the main steps in back propagation algorithm ? What are the applications of back propagation algorithm ?

   (b) Explain the Kohonen's method of unsupervised algorithm ?

Unit III

5. Using suitable diagrams and equations explain the basic Bidirectional Associative Memory Configuration. Also describe its energy function.

6. (a) Draw the architecture of ART network and explain the major phases involved in the ART classification process.

   (b) What are the different forms of ART network ? Discuss about gain control in ART network.

Unit IV

7. (a) What is the use of mutation operator in genetic algorithm ? Compare it with crossover operation.

   (b) What is Optical Neural Network ? What are its advantages ?

8. (a) Differentiate between roulette wheel selection and rank selection methods used in genetic algorithm.

   (b) What is electro-optical matrix multiplier ? What are its applications ? Discuss.