322871(22)

B. E. (Eighth Semester) Examination, April-May 2020

(Old Scheme)

(CSE, IT Engg. Branch)

NEURAL NETWORK & FUZZY LOGIC

(Elective-III)

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

*Note : Part (a) of each question is compulsory and carry 2 marks. In remaining part (b), (c) and (d). Attempt any **two** and carry 7 marks.*

Unit-I

1. (a) Name the persons, who proposed first the basic model of an artificial neuron.

(b) Explain Mc-Culloch-Pitts model of neuron and its assumptions.

(c) Implemented the exclusive-OR function using Mc-Culloch-Pitts neuron model.

(d) Explain recurrect networks in detail.

Unit-II

2. (a) What is sigmoid transfer function?

(b) Describe superwised and unsupervised learning of an ANN.

(c) Explain Hebbian learning algorithm with eample.

(d) What do you mean by Activation functions. Explain with example and its various types in detail.

Unit-III

3. (a) What is Adaline networks?

(b) Explain generalized delta rule in detail.

(c) Explain back propagation algorithm in detail.

(d) Consider a 4-input net with a training input vector and initial weights as :

$$x_i = \begin{bmatrix} +1 \\ -1 \\ +1 \\ -1 \end{bmatrix}, \quad w_i = \begin{bmatrix} +1 \\ -1 \\ 0 \\ -1 \end{bmatrix}$$

Train the given network to achieve target output-1, using the sigmoid activation function. Assume learning rate $\mu = 0.1$.

Unit-IV

4. (a) ANN can be used for which type of applications. Give an example.

(b) How ANN are being used for character recognition applications? Describe.

(c) Explain the architecture and training of neocognitron.

(d) Describe handwritten character recognition application development using a block diagram.

Unit-V

5. (a) Fuzzy logic is used for which type of problems.

   (b) Explain fuzzy set operations in detail.

   (c) Explain fuzzy associative memories in detail.

   (d) Why to use fuzzy logic in Neural network? Give an example.

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