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APR-MAY 2022

B. E. (Eighth Semester) Examination, ~~2020~~

(New Scheme)

(CSE, IT Engg. Branch)

NEURAL NETWORK and FUZZY LOGIC

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

***Note** : Attempt all questions. Part (a) of each question is compulsory. Attempt any **two** parts from (b), (c) and (d) of each question.*

Unit-I

1. (a) Define Neural network topologies. 2

(b) Illustrate the functional Mapping between Biological Neuron and Aritifcial Neuron using appropriate diagrams. 7

(c) Differentiate between Mc-Culloch Pitts Neuron, Rosenblatt's Perceptron and Hopfield neuron models. 7

(d) What is a synapse in ANN? When the action potential reaches the synaptic end, what happens? 7

Unit-II

2. (a) Define terms : 'Convergence, Recall' in learning neural models. 2

(b) Discuss the principle of Learning in Hebbian neural nets; support Hebb's rule with an algorithm. 7

(c) Distinguish among various types of learning mechanisms performed in artificial neural networks. 7

(d) Why is back propagation learning also known as generalized delta rule? 7

Unit-III

3. (a) Define the hidden layer in a neural model. 2

(b) Describe the structural parameter settings required in a typical Back Propagation Neural Network. Write Back-propagation learning algorithm. 7

(c) Justify the linear inseparability of single-layered perceptron with respect to classical XOR problem. 7

(d) Simulate and ADALINE model by identifying its structural parameters for implementing OR Boolean function using bipolar inputs and bipolar targets. 7

Unit-IV

4. (a) What is NET Talk model? 2

(b) Enumerate the applications of BPN models. 7

(c) Ditinguish between pattern association, pattern classification and pattern matching tasks. 7

(d) Explain the character recognition application resolved by Neocognitron model. 7

Unit-V

5. (a) Enumerate any two fuzzy set operations with examples. 2

(b) Explain the hetero-association task performed by BAM model taking any set of exemplary pattern vectors. 7

(c) Explain the working of a typical Fuzzy Control System. 7

(d) Define Fuzzy Relations. Give mathematical expressions for max-min composition and max-product composition upon any two Fuzzy Relations. Illustrate their use in fuzzy inferencing using an example. 7