

Neural Networks and Fuzzy logic (Elective-II)

TYMCA

SECTION I

2008 course

May-2013

- Q1) a) Explain with neat diagram biological neural network. Compare its performance with artificial Neural Network. [6]
- b) What is clustering and what are different methods of clustering? Discuss winner takes all learning network. [6]

OR

- Q2) a) Using MC-Cullochpitts model implement the following logic functions. [6]
- i) Ex-OR gate.
- ii) Ex-NOR gate.
- iii) AND gate.
- iv) NAND gate.
- b) Compare supervised learning with unsupervised learning. Give suitable example to explain. [6]

- Q3) How weights are adjusted with sigmoid activation function? Explain with example. [12]

OR

- Q4) a) Write a short note on [6]
- i) Linearly Non-separable classification problem.
- ii) Hebb's rule
- b) Explain how the delta rule is used to adjust the weights of Adaline network. [6]

- Q5) a) What is backpropagation? With a schematic two-layer feed forward neural network, derive its learning algorithm. [5]
- b) Draw a 3-Layer Feed Forward Neural Net Architecture. How we decide the number of neuron in the input and output layer for a particular application? [6]

OR

- Q6) a) Explain the architecture and training algorithm used in Hopfield network. [6]
- b) What are the applications of back-propagation algorithm? [5]

## SECTION II

- 7) 7 Explain the properties of Commutativity, Associativity, Distributivity, Idempotence, and Identity with respect to crisp sets. [12]

OR

- 8) 8 Write short notes on [12]
- i) Adaptive fuzzy system
  - ii) Knowledge base
  - iii) Decision making logic in fuzzy logic control systems.

- 9) 9 a) Define defuzzication. Explain different methods of defuzzication. [6]
- b) What are the rules based format used to represent the fuzzy information? [6]

OR

- 10) 10 a) Given  $X = \{x_1, x_2, x_3, x_4\}$  of four varieties of paddy plants,  $D = \{d_1, d_2, d_3, d_4\}$  of the various diseases affecting the plants and  $Y = \{y_1, y_2, y_3, y_4\}$  be the common symptoms of diseases. Find SUP-MIN composition. [6]
- b) Discuss in brief how fuzzy rule based model is used for function approximation. [6]

- Q11) 11 a) Explain theory of approximate reasoning. [5]
- b) What are fuzzy implications? Discuss criteria for fuzzy implications. [6]

OR

- Q12) 12 a) Write about conditional fuzzy proposition and unconditional fuzzy proposition. [5]
- b) What are fuzzy modifiers? Explain with an example. [6]