Unit III

5. (a) Using the linear separability concept, obtain the response for OR function (use bipolar inputs and targets). **10**

(b) Write note on Reinforcement learning. **5**

6. As illustrated in Fig. 1, let the input pattern be [0.6 0.8 0] and target output be 0.9. Using the back-propagation training algorithm, find the new weights. Use learning rate $\alpha = 0.3$ and use binary sigmoid activation function. **15**

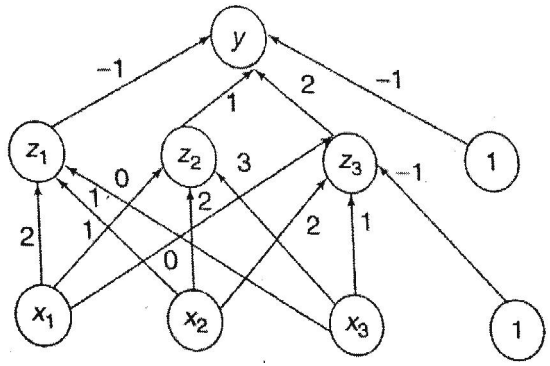

Fig. 1

18BB1002

M.Tech. EXAMINATION, May 2019

(Second Semester)

(C Scheme) (Main Only)

(CSE)

MTCSE504C

SOFT COMPUTING

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

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

Unit I

1. Explain the model of ANN. Explain three types of layers used in ANN. Explain the significance of hidden layer. Also define learning in context of ANN. **15**

2. (a) What are the various constituents of Soft Computing ? Explain. **8**

(b) Explain Deep Learning. How is it different from ANN ? **7**

Unit II

3. (a) Let A, B, C be the fuzzy sets defined on the interval X = [0, 10] of real numbers by the membership functions :

$$A(X) = \frac{X}{X+2}$$

$$B(X) = 2^{-X}$$

$$C(X) = \frac{1}{1+10(X-2)^2}$$

Determine mathematical formulas of membership grade of each of the following sets :

(i) $\overline{A}, \overline{B}, \overline{C}$

(ii) $A \cup \overline{C}, \overline{A} \cap \overline{B}$. **5+5=10**

(b) Explain fuzzy quantifier with an example. **5**

4. (a) "All the Lambda-Cut sets form a family of crisp sets." Justify the statement giving suitable example. **6**

(b) Explain fuzzification. Explain Centroid method, Weighted Average method and Center of Sums method for defuzzification with example. **9**

Unit IV

7. With suitable examples, explain the various types of crossover and mutation techniques used in the genetic algorithm process. **15**

8. Write notes on the following :

(a) Machine learning approaches to knowledge aquisition **7**

(b) Selection process in GA. **8**

Unit IV

7. With suitable examples, explain the various types of crossover and mutation techniques used in the genetic algorithm process. **15**

8. Write notes on the following :

(a) Machine learning approaches to knowledge aquisition **7**

(b) Selection process in GA. **8**