

Seat No. : _____

AG-107

April -2018

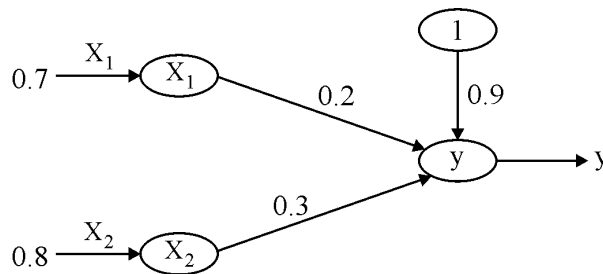
M.Sc. (CA & IT) Integrated, Sem.-VIII

Soft Computing

Time : 3 Hours]

[Max. Marks : 100

1. (a) State the advantage of Neural Network 5
(b) State the difference between Hard Computing and Soft Computing. 5
(c) Explain Biological Neural Network in detail. 7
(d) Define the following terminologies of ANNs : 3
 - (1) Threshold
 - (2) Bias
 - (3) Learning Rate
2. (a) Explain the Theory of Perceptron Learning Network. 10
(b) Write a short note on Unsupervised Learning Network. 5
(c) Calculate the output of the neuron y for the net shown in figure. Use Binary and Bipolar Sigmoidal activation functions. 5



3. (a) Write a short note on Fuzzy versus Crisp. 7
(b) Find the power set and cardinality of the given set $X=\{2,4,6\}$. Also find cardinality of power set. 3
(c) Consider two given Fuzzy sets : 3

$$\tilde{A} = \{(x_1, 1), (x_2, 0.3), (x_3, 0.5), (x_4, 0.2)\}$$

$$\tilde{B} = \{(x_1, 0.5), (x_2, 0.4), (x_3, 0.1), (x_4, 1)\}$$

Find Union, Intersection and Difference over Fuzzy Sets \tilde{A} and \tilde{B}

(d) Two Fuzzy relations are given by

7

$$\tilde{R} = \begin{bmatrix} 0.6 & 0.3 \\ 0.2 & 0.9 \end{bmatrix} \quad \tilde{S} = \begin{bmatrix} 1 & 0.5 & 0.3 \\ 0.8 & 0.4 & 0.7 \end{bmatrix}$$

Find $\tilde{T} = \tilde{R} \circ \tilde{S}$

4. (a) Write a short note on Fuzzy Logic Control System. Sketch the Block Diagram of Closed Loop Control System. **10**

(b) Explain Crossover in detail. **10**

5. (a) Explain Genetic Algorithm in detail. **10**

(b) Explain Neuro- Fuzzy Hybrid System. **10**

OR

Explain Neuro- Genetic Hybrid System.
