

Total No. of Questions : 6]

SEAT No. :

P44

[Total No. of Pages : 2

APR - 17/BE/Insem - 51
B.E. (E & TC)
SOFT COMPUTING TECHNIQUES
(2012 Pattern)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) *Answer Q. 1 or Q.2, Q.3 or Q.4, Q.5 or Q.6*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

- Q1)** a) Using Mc-Culloch Pitts neuron, implement XOR function. Assume suitable initial weights. [6]
- b) Compare and contrast the biological neurons with an artificial neuron model. [4]

OR

- Q2)** a) Explain with suitable diagrams, the various learning mechanisms used in ANN. [6]
- b) State the Hebbian Rule, stating its limitation and the modification to overcome the same. [4]

- Q3)** a) Explain backpropagation algorithm for MLP. State how momentum term can cause faster convergence of algorithm. [6]
- b) Explain the following terms: [4]
- i) Learning rate
 - ii) Weights

OR

- Q4)** a) State the architecture of Radial basis function networks. [6]
- b) State the algorithm for self Organized feature Map network. [4]

P.T.O

Q5) a) Consider two fuzzy sets A and B, calculate $A \cap \bar{B}$ and $B \cap \bar{A}$ [6]

$$A = \left\{ \frac{0.1}{2}, \frac{0.6}{3}, \frac{0.4}{4}, \frac{0.3}{5}, \frac{0.8}{6} \right\}$$

$$B = \left\{ \frac{0.5}{2}, \frac{0.8}{3}, \frac{0.4}{4}, \frac{0.6}{5}, \frac{0.4}{6} \right\}$$

b) State any four properties of Fuzzy sets [4]
OR

Q6) a) Explain any one fuzzy membership function with its transfer characteristics. Describe the possible use of the same with a suitable example. [6]

b) Consider fuzzy relations: [4]

$$R = \begin{matrix} & y_1 & y_2 \\ x_1 & \begin{bmatrix} 0.7 & 0.6 \end{bmatrix} \\ x_2 & \begin{bmatrix} 0.8 & 0.3 \end{bmatrix} \end{matrix} \quad S = \begin{matrix} & z_1 & z_2 & z_3 \\ y_1 & \begin{bmatrix} 0.8 & 0.5 & 0.4 \end{bmatrix} \\ y_2 & \begin{bmatrix} 0.1 & 0.6 & 0.7 \end{bmatrix} \end{matrix}$$

Find the relation $T = R \circ S$ using max-product composition

