SUBJECT CODE-27
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E. (CSE/IT) Examination Nov/Dec 2015
Soft Computing [Elective for IT]
(OLD)

[Time: Three Hours]   **[Max. Marks: 100]**
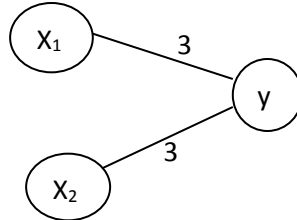
"Please check whether you have got the right question paper."
N.B   i) Attempt any three questions from each section.
SECTION-A

Q.1 A   Generate OR function using Mc-culloch Pitts model.   08

       B   What are basic functional units of ANN for pattern recognition task? Explain in brief.   08

Q.2 A   What is meant by topology of ANN? Draw & explain basic topological structures of ANN.   08
       B   What are the main differences among the three models of artificial neuron namely Mc-Culloch Pitts,   08
           perceptron and Adaline.

Q.3 A   What is perceptron learning for pattern classification? Explain with example .   08
   B   Give & explain two examples of linearly inseparable problems.   08

Q.4 A   Explain back propagation neural network with its derivation. Why it is called as back-propagation neural   08
           network.
       B   Explain the importance of the following terms in feed forward neural network.   08
              1) The momentum factor   2) Threshold value

Q.5   Write short notes on (any three)   18
              1) Hopfield network
              2) Boltzman machine
              3) Applications of ANN
              4) Simulated Annealing

SECTION-B

Q.6 A   Consider a Kohnen network with two cluster units & three input units. The weight vector for the cluster units   08
           are (0.9, 0.7, and 0.6) & (0.4, 0.3, 0.5) find the winning cluster unit for the input vector (0.4, 0.2, and 0.1). Use
           learning rate of 0.2. Find the new weights for the winning unit.
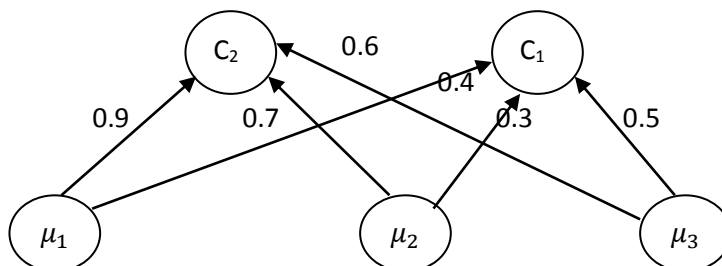
    B   What is competitive neural network? Explain it with its applications.   08

Q.7 A   Distinguish between the following.   08
          i) Crisp set Vs fuzzy set   ii) Numerical Vs linguistic variable
    B   Explain the properties of fuzzy logic.   08

Q.8 A   Perform the following mathematical operations on given fuzzy set.   08
$$\tilde{A} = \{(1,0)(2,0)(3,0)(4,0.2)(5,0.5)(6,0.8)(7,1)(8,1)(9,0.7)(10,0.4)\}$$
$$\tilde{B} = \{(1,1)(2,1)(3,0.9)(4,0.6)\ (5,0.4)(6,0.3)(7,0.2)(8,0.1)(9,0)(10,0)\}$$
      i) $\overline{A}$ ii) $\overline{B}$ iii) $\overline{A} \cup \overline{B}$ iv) $A \cap B$
    B   What is the difference between similarity and possibility approaches for fuzzy database? What are the advantages and disadvantages of these approaches?   08

Q.9 A   Explain the different operations in fuzzy relation data model.   08
    B   Explain fuzzy object oriented databases with example.   08

Q.10   Write short notes on <u>any three</u>   18
        i) Fuzzy SQL
        ii) Genetic algorithm
        iii) Soft computing Vs hard computing
        iv) Uniqueness & redundancy in fuzzy relation