

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII EXAMINATION – WINTER 2015

Subject Code: 173101**Date:16/12/2015****Subject Name: Soft Computing****Time: 10:30am to 1:00pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What is soft computing? Indicate biological analogies of the basic techniques of soft computing? **07**
 (b) What is importance of training, learning and generalization in ANN? **07**
- Q.2** (a) Define Perceptron. Explain the reason why the perceptron cannot be used to implement the EXCLUSIVE-OR function. **07**
 (b) Define: (i) Local minima (ii) Learning Coefficient **07**
- OR**
- (b) Discuss back propagation algorithm. **07**
- Q.3** (a) Describe defuzzification techniques. **07**
 (b) Consider the sets $A = \{(2,0.5)(3,0.3)(4,1)(5,0.7)\}$ and $B = \{(2,0.2)(3,0.4)(4,0.7)(5,0.5)\}$. Find (I) A' (II) B' (III) $A \cup B$ (IV) $A \cap B$ (V) $A \setminus B$ (VI) Verify demorgan's laws. **07**
- OR**
- Q.3** (a) What is mamdani type fuzzy inference? Compare mamdani and sugeno systems. **07**
 (b) Let $X = \{a, b, c, d\}$ $Y = \{1, 2, 3, 4\}$
 And $A = \{(a, 0)(b, 0.8)(c, 0.6)(d, 1)\}$
 $B = \{(1, 0.2)(2, 1)(3, 0.8)(4, 0)\}$
 $C = \{(1, 0)(2, 0.4)(3, 1)(4, 0.8)\}$
 Determine the implication relation "If x is A THEN y is B ELSE y is C." **07**
- Q.4** (a) Describe how knapsack problem solve by GA. Describe your solution using suitable example. **07**
 (b) Draw a flowchart and explain an evolutionary algorithm. **07**
- OR**
- Q.4** (a) How TSP can be solved using GA? Describe operations performed in different phases using suitable example. **07**
 (b) Explain Rank selection method with example. **07**
- Q.5** (a) What are hybrid systems? Explain various hybrid systems. **07**
 (b) What is machine Learning with example? Explain derivational analogy. **07**
- OR**
- Q.5** (a) Explain ANFIS Architecture **07**
 (b) Write a short note on rough set theory. **07**