

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE- SEMESTER VII- • EXAMINATION – WINTER 2017**

**Subject Code: 173101****Date: 15-11-2017****Subject Name: Soft Computing****Time: 10:30 am to 01:00 pm****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 meant by supervised learning and unsupervised learning? Explain the same. Also give the differences between these two. **07**
- (b) (1) Write various applications of artificial neural networks. **03**  
 (2) Discuss the following terms: **04**  
     - membership function  
     - linguistic variable
- Q.2** (a) Discuss various fuzzy set operations with appropriate examples. **07**  
 (b) Write a detailed note on : Back-propagation networks **07**
- OR**
- (b) Explain various types of crossover in genetic algorithm. Apply any two types of crossover for the following two population(s). Mention the necessary assumptions. **07**  
     Parent P1: A B C D E F G H  
     Parent P2: C A H G D F E B
- Q.3** (a) (1) Explain Kohonen's self organizing networks in brief. **04**  
 (2) Discuss various architecture(s) for artificial neural networks. **03**  
 (b) Enlist and explain various defuzzification methods. **07**
- OR**
- Q.3** (a) Describe various encoding methods in genetic algorithm. **07**  
 (b) Give the difference(s) between fuzzy set and rough set. Explain lower approximation and upper approximation in rough set with neat sketches. **07**
- Q.4** (a) Write a detailed note on ANFIS. **07**  
 (b) Enlist and explain various hybrid system. **07**
- OR**
- Q.4** (a) (1) State the comparisons between traditional algorithm and genetic algorithm. **04**  
 (2) Explain max-min composition with respect to fuzzy relations. **03**  
 (b) Write a note on GA based weight optimization **07**
- Q.5** (a) Elaborate the following terms in concerned with machine learning: **07**  
     - Learning by observation and discovery  
     - Learning by analogy  
 (b) Discuss roulette-wheel selection and tournament selection methods in detail with example(s). **07**
- OR**
- Q.5** (a) Write a note on the following: **07**  
     - sequence prediction  
     - conceptual clustering  
 (b) Discuss color recipe prediction with soft computing in detail. **07**

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