

**GUJARAT TECHNOLOGICAL UNIVERSITY****M. E. - SEMESTER – III • EXAMINATION – SUMMER • 2014****Subject code: 730103****Date: 05-06-2014****Subject Name: Soft Computing****Time: 02:30 pm - 05:00 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) Explain perceptron model of neural network with its limitations. **07**  
(b) What is fuzzification? Explain with suitable example how it can be done. **07**
- Q.2** (a) What are LR type fuzzy numbers? Explain architecture of fuzzy neuron and fuzzy backpropagation network. **07**  
(b) Explain various architectures of neural network. **07**
- OR**
- (b) Explain various learning methods of neural networks. **07**
- Q.3** (a) Explain augmented back propagation network. What are its advantages? **07**  
(b) Explain Wang's multiple training encoding strategy. **07**
- OR**
- Q.3** (a) Explain following operations on fuzzy sets with suitable example. **07**  
intersection, complement, product of two fuzzy sets, equality, power of fuzzy set, difference, disjunctive sum.  
(b) What is defuzzification? Explain any two methods with suitable example. **07**
- Q.4** (a) Write sequence of steps to solve any problem using GA. Give flowchart with suitable example. **07**  
(b) Compare various parent selection methods used in GA. **07**
- OR**
- Q.4** (a) Explain various types of cross-over operators with suitable example. What is the effect of cross over and mutation on exploration and exploitation? **07**  
(b) Explain multilevel and multimodal optimization. **07**
- Q.5** (a) Explain the steps to train the fuzzy BP networks with suitable example. **07**  
(b) Explain graphical method to represent inference in FAM with suitable example. **07**
- OR**
- Q.5** (a) How genetic algorithm is used in design of fuzzy logic controller? **07**  
(b) What is fuzzy logic controller? Explain its framework. **07**

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