

GUJARAT TECHNOLOGICAL UNIVERSITY**MCA - SEMESTER-IV • EXAMINATION – WINTER • 2014****Subject Code: 640009****Date: 06-12-2014****Subject Name: Soft Computing****Time: 10:30 am - 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)** Explain the following term related to ANN. **07**
(a) Weights
(b) Bias
(c) Threshold
- (b)** (a) Explain unsupervised learning. **04**
(b) Write the perceptron learning rule. **03**
- Q.2 (a)** What are the various techniques of soft computing & Discuss its applications of soft computing in detail. **07**
- (b)** What are the limitations with error back-propagation algorithm? Define its characteristics and applications? **07**
- OR**
- (b)** Differentiate between biological neuron and artificial neuron on the basis of structure and function of a single neuron **07**
- Q.3 (a)** What are the various types of crossover and mutation techniques? **07**
- (b)** Explain the architectures of discrete BAM and Hopfield network. **07**
- OR**
- Q.3 (a)** Define Artificial Neural Network with its characteristics and advantages. Describe any five applications of using the artificial neural networks. **07**
- (b)** Explain the basic components of soft computing. **07**
- Q.4 (a)** Write the general genetic algorithm **07**
- (b)** Explain in detail about the various operators involved in genetic algorithm. **07**
- OR**
- Q.4 (a)** Explain the basic architecture of FLC and write steps involved in designing FLC. **07**
- (b)** What is fuzzy rule based system? State various applications of fuzzy Systems. **07**
- Q.5 (a)** Explain architecture of a fuzzy logic controller. **07**
- (b)** List the various applications of fuzzy logic controller. **07**
- OR**
- Q.5 (a)** Write the applications of genetic algorithm. **07**
- (b)** Explain various selection methods for reproduction in genetic algorithm. **07**
