

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA - SEMESTER- IV EXAMINATION – WINTER 2014

Subject Code: 2640009**Date: 06/12/2014****Subject Name: Soft Computing (SC)****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)** Define the following terms. **07**
(1).Artificial Intelligence
(2).Crisp Relations
(3).Genetic Algorithm
(4).Competitive Learning
(5).Inheritance Operators
(6).Linear Separability.
(7).Hybrid Systems
- (b)** (1).Explain Radial Basis Function Network (RBFN) in brief? **07**
(2).What is Competitive Learning?
- Q.2 (a)** What is Soft Computing? Discuss different techniques used in Soft Computing and its applications. **07**
- (b)** Explain Fuzzy Logic, Fuzzy set and differentiate Fuzzy set Vs. Crisp set. **07**
- OR**
- (b)** Explain various types of crossover and mutation techniques. **07**
- Q.3 (a)** Explain Genetic algorithm in terms of Reproduction, Selection, Evaluation and Replacement? **07**
- (b)** (1).Differentiate between ART1 and ART2? **07**
(2).Differentiate AI problems Vs. Conventional problems?
- OR**
- Q.3 (a)** (1).Autoassociative Memory Network Vs. Heteroassociative Memory Network **07**
(2).Supervised Learning Vs. Unsupervised Learning.
- (b)** What is neural network? Elaborate on the features of neural network that help to solve complex problems. **07**
- Q.4 (a)** Explain Control System Design with Architecture and Operation of FLC system? **07**
- (b)** Is it possible to solve Travelling Sales Man Problem using Genetic Algorithm? How? Write the steps in brief. **07**
- OR**
- Q.4 (a)** Difference between fuzzification and defuzzification methods. **07**
- (b)** How does universal approximation play an important role in hybrid approach of soft computing? **07**
- Q.5 (a)** Explain Back-propagation Training Algorithm in brief, and discuss applications of it? **07**
- (b)** Explain McCulloch-Pitts Neuron model and write disadvantage of it. **07**

OR

- Q.5 (a)** How can Fitness functions be found for any optimization problem? Explain, in detail, Fitness Function in Genetic algorithm. **07**
- (b)** (1).Discuss the relationship between bias and variance dilemma. **07**
(2).Differentiate between feed forward and feedback network.
