Seat No.: _____ Enrolment No._____

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 defuzzfication 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.

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