

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER-VI • EXAMINATION – WINTER 2013

Subject Code: 640009

Date: 13-12-2013

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.

- Q1** (a) What are the various techniques of soft computing & Discuss its applications of soft computing in detail. 07
- (b) What is artificial neural network? Explain MC-Culloch & Pitt's model. Difference between Artificial neural network & Human Brain. 07
- Q2** (a) Explain Hopfield network. How it is different from error back propagation network? Can we get stable output from recurrent network? How? 07
- (b) Differentiate the following: 07
1. Normal and subnormal fuzzy set 2. Convex and non convex fuzzy set
- OR**
- (b) How Single Layer network works? Why the perceptron training algorithms are required? 07
- Q3** (a) Compare Mc-Culloch & Pitt's Model 04
- (b) Differentiate between mamdani FIS & Sugeno FIS 03
- (c) What are the limitations with error back-propagation algorithm? Define its characteristics and applications? 07
- OR**
- Q3** (a) Explain the error back propagation algorithm? 07
- (b) Differentiate between biological neuron and artificial neuron on the basis of structure and function of a single neuron. 04
- (c) Describe Mamdani Fuzzy inference system with its advantages 03
- Q4** (a) Differentiate between biological neuron and artificial neuron on the basis of structure and function of a single neuron 07
- (b) Explain the working and applications of Kohonen's self organizing feature map. 07
- OR**
- Q4** (a) Explain how Boltzmann machine can be overcomes the problems associated with the Hopfield nets? Describe the application of Boltzmann Machine 07
- (b) Explain binary encoding for knapsack problem in detail. 07
- Q5** (a) Explain cross over operator with its type. 07
- (b) Explain the features of membership functions and state its importance in fuzzy logic 05
- (c) Explain: 1. Rank selection 2. Steady state selection 02
- OR**
- Q5** (a) Describe Mamdani Fuzzy inference system with its advantages 07
- (b) Explain roulette –wheel selection in detail 04
- (c) Explain: 1. Segregation 2. Cross over & inversion 3. Mutation rate 03
