Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
M.C.A -IVth SEMESTER–EXAMINATION – MAY- 2012

Subject code: 640009   **Date: 19/05/2012**
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)**   (i) What are the advantages of working with artificial Neural Network?   **07**
                   (ii) Compare feed-forward and feedback network
         (b)   Which algorithms are developed for training of pattern association nets?   **07**

Q.2 **(a)**   Write the steps involved in training algorithm of Kohonen self organizing   **07**
                   feature maps.
         (b)   What is the principle behind simulated annealing network? Which   **07**
                   components are required for annealing algorithm?
                                           OR
         (b)   Write the testing algorithm for Boltzmann Machine.   **07**

Q.3 **(a)**   (i) Explain unsupervised learning.   **04**
                   (ii) Write the perceptron learning rule.   **03**
         (b)   Explain the architecture of a fuzzy logic controller.   **07**
                                           OR
Q.3 **(a)**   (i) What is the role of supplemental units in Adaptive Resonance   **04**
                        theory 1 network? What difficulties are faced by computational
                        units?
                   (ii) State the significance of Adaptive Resonance theory 2 network?   **03**
         (b)   List the various applications of fuzzy logic controller.   **07**

Q.4 **(a)**   Explain the following technologies related to Artificial Neural Networks.   **07**
                   (i) Weights
                   (ii) Bias
                   (iii)   Threshold
         (b)   (i)   In which neural net, the training input and the target output vectors   **04**
                         are different?
                   (ii)   What is continuous bidirectional associative memory.   **03**
                                           OR
Q.4 **(a)**   Write the error back propagation learning algorithm.   **07**
         (b)   (i) Explain the structure of Mexican Hat Net.   **04**
                   (ii) What is the idea of competition in Fixed weight competitive nets?   **03**

Q.5 **(a)**   Write the general genetic algorithm.   **07**
         (b)   Explain in detail about the various operators involved in genetic algorithm.   **07**
                                           OR
Q.5 **(a)**   What are the various types of crossover and mutation techniques?   **07**
         (b)   Write the applications of genetic algorithm.   **07**

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