Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E –IIst SEMESTER–EXAMINATION – JULY- 2012

Subject code: 1722308 **Date: 12/07/2012**

Subject Name: Soft Computing

Time: 10:30 am – 13:00 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)**	How GA differs from traditional algorithms? Explain each step of solving any problem using GA.	**07**
	(b)	What is ANN? Explain the statement "ANN does not give the exact solution for a nonlinear problem. However it provides possible approximate solution to nonlinear problems."	**07**
Q.2	**(a)**	Find the weight matrix in bipolar form for the bidirectional associative memory using outer products rule for the following binary input output vector pairs: s(1) = (1 0 0 0), t(1) = (1 0) s(2) = (1 0 0 1), t(2) = (1 0) s(3) = (0 1 0 0), t(3) = (0 1) s(4) = (0 1 1 0), t(4) = (0 1) Also test the response of the network for input pattern [1 0 -1 -1].	**07**
	(b)	Write short note on: Simulated Annealing method.	**07**
		OR	
	(b)	Explain how the training in Back propagation network (BPN) is done?	**07**
Q.3	**(a)**	What is the significance of crossover and mutation in GA? Explain various forms of crossover and mutation.	**07**
	(b)	What is feature mapping? Explain how the architecture of Learning Vector Quantization differs from Kohonen Self-Organizing Feature maps.	**07**
		OR	
Q.3	**(a)**	Explain the classification of hybrid systems. Explain any one hybrid system.	**07**
	(b)	Explain the fundamental architecture of ART network with its fundamental algorithm.	**07**
Q.4	**(a)**	What do you mean by LR type fuzzy numbers? What are its applications? Explain architecture of fuzzy back propagation network.	**07**
	(b)	List the methods of Fuzzy Inference Systems. Explain any one in detail.	**07**
		OR	
Q.4	**(a)**	List defuzzification methods. Explain any three methods.	**07**
Q.4	**(b)**	Explain the architecture and operation of Fuzzy Logic Control Systems.	**07**
Q.5	**(a)**	With a case study example, describe in detail the applications of soft computing.	**07**
	(b)	Write short note on: Selection methods in GA.	**07**
		OR	
Q.5	**(a)**	Explain variations of standard back propagation algorithms.	**07**
	(b)	Using your own intuition and definitions of universe of discourse, plot fuzzy membership function for (1) Weight of people and, (2) Frequency range of receivers.	**07**

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