Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER 2012

Subject code: 1722308		code: 1722308 Date: 02-01-201	Date: 02-01-2013	
Sub	ject	Name: Soft Computing		
Tim	e: 10	0.30 am – 01.00 pm Total Marks: 7	70	
Inst	ruct	tions:		
	1.	Attempt all questions.		
		Make suitable assumptions wherever necessary.		
	3.	Figures to the right indicate full marks.		
Q.1	(a)	What is ANN? Explain about solution provided by ANN for nonlinear problems.	07	
	(b)	What is Soft computing? Explain application areas of Soft computing.	07	
Q.2	(a)	Three Fuzzy sets X, Y, Z are as follows.	07	
		$X = \{(1,0),(2,0.45),(3,0.45),(4,0)\}$		
		$Y = \{(3,0),(4,0.8),(5,0.8),(6,0)\}$		
		$Z = \{((5,0),(6,1),(7,1),(8,0)\}$		
		Find defuzzified output of aggregated fuzzy sets X, Y, Z using centroid method.		
	(b)	What is learning in Neural network? Explain single layer perceptron and its learning. OR	07	
	(b)	What is Back Propagation Algorithm? Explain its variations.	07	
Q.3	(a)	Explain Genetic Algorithm operators. Explain different types of parent	07	
		selection methods with suitable example.		
	(b)	Write short note on : Kohonen Self-Organizing Feature maps.	07	
		OR		
Q.3	(a)	What is activation function? Explain its type with related mathematics.	07	
	(b)	What is Evolutionary Computing? Explain basic principles of Genetic Algorithm.		
Q.4	(a)	List fuzzification methods. Explain any three methods.		
	(b)	b) What is Fuzzy Logic? Explain the architecture and operation of Fuzzy		
		Logic Control Systems.		
		OR		
Q.4		What is defuzzification? List its methods. Explain any three methods.	07	
Q.4	(b)	What are the various methods of Fuzzy Inference Systems? Explain any one method in detail.	07	
Q.5	(a)	Using your own intuition and definitions of universe of discourse, plot	07	
		fuzzy membership functions for		
		(i) Speed of car in five grades.		
		(ii) Frequency range of receivers in three grades.		
	(b)	, , , , , , , , , , , , , , , , , , , ,	07	
		washing machine.		
0.5		OR William A 1866	^=	
Q.5	(a)	Explain Neuro-Fuzzy systems. What are the different ways of	07	
	(b)	hybridization of Neural Network and Fuzzy Logic?	07	
	(b)	Explain GA based Back Propagation Network with suitable example.	07	
