GUJARAT TECHNOLOGICAL UNIVERSITY

DE VIIth 2012

BE- VIIth SEMESTER-EXAMINATION – MAY/JUNE- 2012						
Subje	ect co	Dete: 173101 Date: 28/05/2012				
Subject Name: Soft Computing						
Time: 02:30 pm – 05:00 pm Total Marks: 70						
Instructions:						
1. Attempt all questions.						
2. Make suitable assumptions wherever necessary.						
3.	0	res to the right indicate full marks.				
Q.1	(a)	Explain the working of artificial neuron and compare it with biological neuron.	07			
	(b)	(i) Explain different neural network architectures.	04			
		(ii) What do you mean by cross over reproduction?	03			
Q.2	(a)	Discuss various operations of fuzzy sets with example.	07			
X	(b)	Explain the various learning steps of back propagation network.	07			
	()	OR				
	(b)	Explain mamdani Fuzzy Inference System with example.	07			
Q.3	(a)	What do you mean by Genetic algorithm? How it is different from traditional	07			
		algorithm?				
	(b)	What is defuzzification? Describe different methods of defuzzification. OR	07			
Q.3	(a)	Explain how Genetic algorithm used for weight optimization in neural network.	07			
X	(b)	Define rough set, upper approximation, and lower approximation. Explain with	07			
		example.				
Q.4	(a)	Explain Adaptive neuro fuzzy inference system in detail.	07			
	(b)	What do you mean by Hybrid system? Discuss advantages and application of	07			
		neuro fuzzy hybrid system. OR				
Q.4	(a)	Explain working of competitive learning. Discuss its limitation.	07			
X	(b)	Describe learning vector quantization with suitable example.	07			
Q.5	(a)	Let $X=\{a,b,c,d\}$ $Y=\{1,2,3,4\}$ Let A & B are fuzzy sets such as	07			
		$A = \{(a,0)(b,0.8)(c,0.6)(d,1)\} B = \{(1,0.2)(2,1)(3,0.8)(4,0)\}$				
		Determine the implication relations				
		IF x is A THEN y is B.	07			
	(b)	Let R & S be fuzzy relations given below find max-min composition and max	07			
		prod composition.				
		$\mathbf{R} = \begin{bmatrix} 0.5 & 0.1 \\ 0.2 & 0.0 \end{bmatrix}$				
		$\mathbf{R} = \left(\begin{array}{ccc} 0.5 & 0.1 \\ 0.2 & 0.9 \\ 0.8 & 0.6 \end{array}\right) \qquad \mathbf{S} = \left(\begin{array}{ccc} 0.6 & 0.4 & 0.7 \\ 0.5 & 0.8 & 0.9 \end{array}\right)$				

OR

Q.5	(a)	What are limitations of single layer perception model? How it can be overcome.	07
	(b)	i) What do you mean by activation function, bias, and	03
		delta rule ?	
		ii) Describe the different activation functions in neural network.	04
