Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2021

Subject Code:3172009 Date:29/12/2021

Subject Name:Soft Computing

Time:10:30 AM TO 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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Explain Importance of Soft Computing.	**03**
	(b)	Explain Hybrid Intelligent Systems concept.	**04**
	(c)	Write short note on GA operators.	**07**
Q.2	**(a)**	Explain concept of Evolutionary Algorithms.	**03**
	(b)	Explain Main Components of Soft Computing.	**04**
	(c)	Explain all methods of De-fuzzification.	**07**
		OR	
	(c)	How to solve single-objective optimization problems using GAs?	**07**
Q.3	**(a)**	Discuss about the Demorgan's law for the fuzzy sets. Say whether it is similar to that of classical sets.	**03**
	(b)	Explain development of fuzzy interface systems.	**04**
	(c)	Explain Supervised Learning Network – Perceptron, ADALINE, MADALINE, Back propagation network	**07**
		OR	
Q.3	**(a)**	Explain Hebb Network.	**03**
	(b)	Explain McCulloch-Pitts Neuron model.	**04**
	(c)	Explain Design of a fuzzy logic controller: Mamdani & Sugeno Architecture.	**07**
Q.4	**(a)**	Explain Properties Fuzzy sets.	**03**
	(b)	Explain Membership functions and its features.	**04**
	(c)	Explain any one application with details of Fuzzy logic systems in control systems.	**07**
		OR	
Q.4	**(a)**	Compare Biological neurons vs artificial neural network.	**03**
	(b)	Differentiate classical sets vs fuzzy sets.	**04**
	(c)	Explain any one application with details of Neural network systems in control systems.	**07**
Q.5	**(a)**	How is Soft Computing different from Hard Computing?	**03**
	(b)	Define the Cartesian product of two fuzzy sets with the help of an example.	**04**
	(c)	Explain applications of Soft computing in automation, robotics and machine vision.	**07**
		OR	
Q.5	**(a)**	Explain the difference between randomness and fuzziness.	**03**
	(b)	Explain support vector machine.	**04**
	(c)	Explain Hybrid soft computing systems.	**07**

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