Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2023

Subject Code:3160619 Date:10-07-2023

Subject Name:Soft Computing Techniques

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)**	What are the different fuzzy sets? Define them	**03**
	(b)	What is soft computing? How it differs from hard computing?	**04**
	(c)	Discuss the characteristics and applications of soft computing techniques.	**07**
Q.2	**(a)**	What are the roles of α-cut in fuzzy set theory?	**03**
	(b)	Explain the evolution phases of Fuzzy logic	**04**
	(c)	Explain the fuzzy inference with suitable Example	**07**
		OR	
	(c)	What are the various defuzzification methods? Explain them.	**07**
Q.3	**(a)**	What are the basic Genetic Algorithm Operators?	**03**
	(b)	Compare non-fuzzy logic and fuzzy logic approaches	**04**
	(c)	Write Short note on: (i) Convergence of GA (ii) Multi-Level Optimization	**07**
		OR	
Q.3	**(a)**	How do you select mutation in GA?	**03**
	(b)	How is Genetic Algorithm differing from traditional algorithm?	**04**
	(c)	What is Roulette wheel selection in GA? Explain in detail.	**07**
Q.4	**(a)**	Distinguish between supervised learning and unsupervised learning.	**03**
	(b)	What is Rank selection in GA? Explain in brief.	**04**
	(c)	Why activation function is used in artificial neuron? Explain different activation functions.	**07**
		OR	
Q.4	**(a)**	Distinguish between artificial neuron & biological neuron	**03**
	(b)	Explain the taxonomy of artificial neural network architectures.	**04**
	(c)	With neat sketch, differentiate multilayer feed forward networks and recurrent neural networks.	**07**
Q.5	**(a)**	What do you mean by hybrid systems? Enlist various hybrid systems and give brief explanation.	**03**
	(b)	Sketch the architecture of Boltzmann network and mention the steps for recall Procedure.	**04**
	(c)	Draw and explain models of Neuro Fuzzy System.	**07**
		OR	
Q.5	**(a)**	Write the comparisons between fuzzy systems and neural network.	**03**
	(b)	Write and explain applications of Neuro Fuzzy System.	**04**
	(c)	Define and explain fuzzy-Genetic hybrid Systems.	**07**

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