Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– 1 (NEW) • EXAMINATION – WINTER - 2021

Subject Code:3710721 Date:07 Mar 2022

Subject Name:AI 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.**

Q.1	**(a)**	Differentiate between soft computing techniques and hard computing systems for engineering applications.	**07**
	(b)	Explain with appropriate example- crisp logic and fuzzy logic.	**07**
Q.2	**(a)**	Explain Neural Network architecture with comparison to human nervous system.	**07**
	(b)	Define defuzzification and enumerate different defuzzification methods. Explain any one in detail.	**07**
		OR	
	(b)	Name and describe the main features/elements/steps of Genetic Algorithms.	**07**
Q.3	**(a)**	Distinguish between Supervised and Unsupervised Learning.	**07**
	(b)	Explain fuzzy rule based system for decision making.	**07**
		OR	
Q.3	**(a)**	Explain backpropagation algorithm learning for neural network.	**07**
	(b)	How does the GA differ from conventional optimization algorithm? Give the various comparison points	**07**
Q.4	**(a)**	Define the terms chromosome, fitness function, crossover and mutation as used in genetic algorithms.	**07**
	(b)	Explore construction and working principle and application of Radial Basis Function Networks	**07**
		OR	
Q.4	**(a)**	How Tournament selection strategy is comparable to Roulette wheel selection strategy, if they are individually applied in Genetic algorithm?	**07**
	(b)	Enumerate various activation functions of a neuron with their appropriate application.	**07**
Q.5	**(a)**	Suggest neural network based design for power system security assessment.	**07**
	(b)	How Fuzzy logic can be useful for load balancing of electric power three phase distribution system..	**07**
		OR	
Q.5	**(a)**	How artificial neural network can be useful for load forecasting of electric power system	**07**
	(b)	Explain application of Genetic Algorithm for constrained optimization.	**07**

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