Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA ENGINEERING - SEMESTER–V • EXAMINATION – SUMMER 2013

Subject Code: 743101 **Date: 14-05-2013**

Subject Name: Intelligent Control Systems

Time: 10:30 am - 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. **English version is considered to be Authentic.**

1.

Q.1	**(a)**	Define intelligence, artificial intelligence and intelligent control system. How intelligent control systems can be helpful in biomedical instrumentation?	**07**
	(b)	Explain the main tools and combinational tools for artificial intelligence.	**07**
Q.2	**(a)**	Explain main stages of genetic algorithm.	**07**
	(b)	Give the difference between conventional controller and fuzzy controller.	**07**
		OR	
	(b)	Explain the applications, and pros and cons of genetic algorithms.	**07**
Q.3	**(a)**	What is fuzzification? Explain fuzzification with triangular and trapezoidal membership function.	**07**
	(b)	Explain with example, max-min composition.	**07**
		OR	
Q.3	**(a)**	What is defuzzification? Explain two methods of defuzzification in brief.	**07**
	(b)	Explain with example, max-star composition.	**07**
Q.4	**(a)**	Build AND, OR, and NOT logic with neural network with variable weights and constant threshold (i.e. same threshold value for all AND, OR, and NOT logic).	**07**
	(b)	Explain in detail mamdani fuzzy controller.	**07**
		OR	
Q.4	**(a)**	Build AND, OR, and NOT logic with neural network with constant weights and variable threshold (i.e. same weights value for all AND, OR, and NOT logic).	**07**
Q.4	**(b)**	Explain in detail takagi-sugeno fuzzy controller.	**07**
Q.5	**(a)**	What is perceptron? Why it cannot perform the task of XOR gate?	**07**
	(b)	Write a technical note on ADALINE.	**07**
		OR	
Q.5	**(a)**	Explain with block diagram neuro-fuzzy controller.	**07**
	(b)	Write a technical note on ANFIS.	**07**

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