

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**
