Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**ME - SEMESTER–IV • EXAMINATION – SUMMER 2015**

**Subject Code: 743101** **Date: 01/05/2015**

**Subject Name: Intelligent Control System**

**Time: 2:30 pm to 5:00 pm** **Total Marks: 70**

**Instructions:**

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

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|---|---|---|---|
| **Q.1** | **(a)** | Define intelligence, artificial intelligence and intelligent control system. How intelligent control systems can be helpful in biomedical instrumentation? | **07** |
| | **(b)** | Enlist and explain the applications and limitations of fuzzy systems. | **07** |
| **Q.2** | **(a)** | What is perception? Why it can not perform the task of XOR gate? | **07** |
| | **(b)** | Write a technical note on ANFIS. | **07** |
| | | **OR** | |
| | **(b)** | Write a technical note on ADALINE. | **07** |
| **Q.3** | **(a)** | Describe feedback network ANN with necessary example. | **07** |
| | **(b)** | Explain with example max-min composition. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Explain back propagation algorithm with necessary example | **07** |
| | **(b)** | Explain with example max-star composition | **07** |
| **Q.4** | **(a)** | What is fuzzificaion ? Explain fuzzyfication with any two membership function. | **07** |
| | **(b)** | Explain aim four stages of genetic algorithm | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | What is defuzzification ? Explain two methods of defuzzification in brief. | **07** |
| | **(b)** | Explain the applications, pros and cons of genetic algorithm | **07** |
| **Q.5** | **(a)** | Explain the mamdani fuzzy controller with necessary examples. | **07** |
| | **(b)** | 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** |
| | | **OR** | |
| **Q.5** | **(a)** | Brief describe Takagi- Sugeno Fuzzy controller with appropriate examples. | **07** |
| | **(b)** | 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** |

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