

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**ME - SEMESTER- 1 • EXAMINATION – SUMMER - 2024**

**Subject Code:3710721****Date: 24 Jun 2024****Subject Name:AI Techniques****Time:02:30 PM TO 05:00 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 AI techniques and alternative approaches toward problem solving. Discuss about AI approaches' qualities and describe the domains in which different AI approaches are applied. **07**
- (b) Discuss importance of learning in ANN and different kinds of ANN learning strategies. **07**
- Q.2** (a) Write a note on feed forward neural network architecture with suitable diagram. **07**
- (b) Explain and compare various fuzzy implication methods. **07**
- OR**
- (b) What is fuzzification & defuzzification? Give the difference between crisp and fuzzy set. **07**
- Q.3** (a) Describe the genetic algorithm. What makes it differ from other conventional search methods and optimization strategies. **07**
- (b) Discuss various steps required to solve optimization problem using GA. **07**
- OR**
- Q.3** (a) What is the potential utility of fuzzy logic in power system voltage control? **07**
- (b) Describe the application of AI to the assessment of power system state security. **07**
- Q.4** (a) Describe the application of neural networks in load forecasting. **07**
- (b) Describe following selection strategies for chromosomes with reference to GA **07**  
Roulette-wheel selection, Rank selection, Tournament selection.
- OR**
- Q.4** (a) What do you mean by membership function in fuzzy? Discuss different types of membership functions in brief. **07**
- (b) Describe the backpropagation algorithm used in multi layer neural network training with suitable diagram. **07**
- Q.5** (a) Explain any three cross-over techniques with the help of suitable example. **07**
- (b) How GA used in unit Commitment in power system? **07**
- OR**
- Q.5** (a) Explain Fuzzy complement, union, and intersection with any appropriate example. **07**
- (b) What does GA mutation mean? How can mutation be applied, Describe the different programming logics employed in the same. **07**

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