

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER- 1 (OLD) • EXAMINATION – WINTER - 2024

Subject Code:3710721**Date: 16 Jan 2025****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)** In power systems engineering, someone wants to find (1) the Ybus matrix of a power systems network and perform (2) load forecasting for a control area. Give which technique is suitable for solving these two task: (A) soft computing technique or (B) hard computing technique? **07**
 Give at least three reasons to justify the selection of a technique.
- (b)** What is expert systems? How does it defer from the AI technique give Example of one expert system **07**
- Q.2 (a)** What are layers in ANN? How the no. of layers in an ANN is selected? What are neurons in ANN? How the no. of Neurons are decided in Various layers of ANN? **07**
- (b)** Compare Perceptron ANN with feed forward ANN from the application view point. What difference does it make if both these are single layer or double layer? **07**
- OR**
- (b)** RBF (Radial Basis Function) Networks are suitable for solving which type of problem? Give example with explanation. How does the training of RBF defer from the training of FF ANN? **07**
- Q.3 (a)** What are the Basic fuzzy set operations? Explain properties of Fuzzy set **07**
- (b)** What is Defuzzification? Why is it require? Explain one method of Defuzzification with example **07**
- OR**
- Q.3 (a)** What is FIS? What is the significance of FIS and a rule based Fuzzy systems? Can ANN be used in FIS? Justify your answer. **07**
- (b)** Draw the profile of a suitable membership function for a fuzzy set called “Tall men”. Take your own values for different heights. **07**
- Q.4 (a)** What is objective function in traditional optimization method? How the same is termed in GA? What is cross over and mutation in GA? **07**
- (b)** Explain Tournament selection used in GA **07**
- OR**
- Q.4 (a)** In which type of applications GA is preferred over the conventional techniques. Give at least three points where GA should be considered better. **07**
- (b)** How GA can be used for constrained optimization? Explain with flow chart **07**
- Q.5 (a)** How Fuzzy logic can be used for feeder load balancing **07**
- (b)** Explain application of ANN for power system security assessment **07**
- OR**
- Q.5 (a)** Explain Application of GA for economic load dispatch **07**
- (b)** Compare the conventional controlling technique of AGC with Fuzzy controller **07**
