

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER- 1 (NEW) • EXAMINATION – SUMMER - 2021

Subject Code:3710721**Date: 21 Sep 2021****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) Discuss the difference between soft computing and hard computing technique. **07**
(b) Explain the electric load forecasting using ANN. **07**
- Q.2** (a) What is the learning rate of NN? Discuss the effect of learning rate on convergence. **07**
(b) For the single layer neural network with four inputs [0.8, 0.3, 0.2, 0.6] and their associated weights are [-0.2, 0.3, 0.8, 0.5]. Calculate output when the activation function is sigmoidal. **07**
- OR**
- (b) Explain the ADALINE and MADALINE structure of neural network with weight updated rules. **07**
- Q.3** (a) Derive the gradient descent algorithm for back propagation NN. **07**
(b) What is a schema? What is the relationship between schema and chromosome? **07**
- OR**
- Q.3** (a) Explain RBFN and FFNN. **07**
(b) Define following terms: **07**
(1) Support (2) α -cut (3) Linguistic variable (4) Membership Function (5) Fuzzy singleton (6) Fuzzification (7) Cross-over
- Q.4** (a) List out defuzzification method. Explain any one. **07**
(b) Describe Fuzzy IF-THEN rule along with fuzzy inference system. **07**
- OR**
- Q.4** (a) What are the advantages of the neuro fuzzy hybridization? **07**
(b) What is mutation in GA? Explain how mutation can be implemented? Explain various programming logic used for the same. **07**
- Q.5** (a) Explain GA based Unit Commitment in power system. **07**
(b) How the ANN can handle the voltage stability issue in the power system. **07**
- OR**
- Q.5** (a) What is the static and dynamic security? Discuss ANN based the security assessment. **07**
(b) Discuss the load frequency generation control using AI techniques. **07**
