

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – III • EXAMINATION – WINTER • 2014****Subject code: 730702****Date: 27-11-2014****Subject Name: Application of Artificial Intelligence to Power Systems****Time: 02:30 pm - 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) Name and describe main features of Genetic Algorithm. **07**
(b) How ANN will be useful for load forecasting? Explain with suitable example. **07**
- Q.2** (a) How genetic algorithm differs from other optimization and search techniques? **07**
(b) Explain various types of learning models employed in Neural Network. **07**
- OR**
- (b) Explain the four most important features associated with ANN. **07**
- Q.3** (a) Explain Fuzzy IF-THEN rule along with fuzzy inference system. **07**
(b) Explain the following genetic representations with appropriate illustrations. **07**
(a) Octal (b) Binary (c) Hexadecimal
- OR**
- Q.3** (a) Discuss various steps required to solve optimization problem using GA. **07**
(b) List out various transfer functions in case of ANN. Define and draw various continuous transfer functions as applied to ANN. **07**
- Q.4** (a) How Fuzzy logic can be useful for voltage control in power system? **07**
(b) What is Artificial Intelligence? Briefly describe characteristics and advantages of it. **07**
- OR**
- Q.4** (a) Discuss scheduling maintenance of electric power transmission network using genetic algorithms. **07**
(b) Differentiate between fuzzy and crisp logic. Also explain Fuzzy operators like Union, Intersection and complement with corresponding examples. **07**
- Q.5** (a) Explain feed forward structure in detail with suitable diagrams. **07**
(b) Compare various defuzzification methods based on various associated aspects. **07**
- OR**
- Q.5** (a) Explain any three cross-over techniques with the help of suitable examples. **07**
(b) Give the brief history and basic principles of any two intelligent systems. **07**
