

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. Sem. – III - Examination –June- 2011

Subject code: 730702**Subject Name: Application of Artificial Intelligence to Power Systems****Date:07/06/2011****Time: 10.30 am – 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) What do you mean by membership function? Discuss different types of membership functions in brief. **07**
- (b) Classify neural network models. Discuss feed forward neural network in brief. **07**

- Q.2** (a) Discuss and compare various fuzzy implication methods. **07**
- (b) What is artificial intelligence? How AI techniques are useful in electrical engineering? **07**

OR

- (b) Explain with suitable example, the conditions under which AI techniques are beneficial over conventional techniques. **07**

- Q.3** (a) Explain application of AI technique in voltage control. **07**
- (b) What do you mean by training of neural network? Explain its significance and discuss any one of training technique in brief. **07**

OR

- Q.3** (a) Compare various defuzzification methods. Comment on each of them. **07**
- (b) Explain weight calculations for output layer and hidden layer neurons. **07**

- Q.4** (a) Explain concept of genetic algorithm (GA) in brief. What do you mean by genetic representation and fitness function? **07**
- (b) Explain following with reference to GA methodology: (1). Initialization **07**
(2). Selection (3). Reproduction and (4). Termination

OR

- Q.4** (a) Explain application of genetic algorithm in maintenance schedule of electrical power transmission network. **07**
- (b) Discuss ANN based fuzzy inference system (ANFIS) in brief. **07**

- Q.5** (a) Explain ANN based voltage stability assessment in brief. **07**
- (b) Explain evolutionary programming and its merits over other AI techniques. **07**

OR

- Q.5** (a) Discuss design for security assessment using any AI technique. **07**
- (b) Discuss ANN identification of dynamic model. **07**
