Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. SEMESTER III–EXAMINATION (Remedial) – WINTER 2015

Subject code: 730702 **Date: 07/12/2015**

Subject Name: Application of Artificial Intelligence to Power System

Time: 2:30 PM to 5:00 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)**	Briefly explain membership functions & its types.	**07**
	(b)	Compare AI techniques with conventional techniques with suitable example.	**07**
Q.2	**(a)**	Suggest steps to apply fuzzy logic for voltage control..	**07**
	(b)	What is fuzzification & defuzzification? Give the difference between crisp and fuzzy set.	**07**
		OR	
	(b)	Enlist various methods of diffuzification. Explain any two.	**07**
Q.3	**(a)**	What is Artificial Intelligence? Compare Artificial Intelligence techniques with conventional techniques with appropriate example.	**07**
	(b)	Enlist different application of Genetic Algorithm in power system. Discuss any one in brief.	**07**
		OR	
Q.3	**(a)**	Explain application of Artificial Intelligence in power system with AI properties and benefits.	**07**
	(b)	Explain steps to construct Genetic Algorithm.	**07**
Q.4	**(a)**	Explain Genetic Algorithm. How it differs from other optimization techniques & search procedures.	**07**
	(b)	Discuss design for power system security assessment using AI technique.	**07**
		OR	
Q.4	**(a)**	Discuss scheduling and maintenance of electrical power transmission network using Genetic Algorithm	**07**
	(b)	Explain the role AI techniques for demand forecasting.	**07**
Q.5	**(a)**	Discuss various learning models of Neural Network. Explain back propagation algorithm in brief.	**07**
	(b)	Explain chromosomes, crossover, mutation, fitness function.	**07**
		OR	
Q.5	**(a)**	Describe a perceptron. Why is it also called a Linear Thresholding Unit (LTU)? Give the perceptron learning rule. What conditions should be satisfied for the algorithm to converge?	**07**
	(b)	Discuss ANN based fuzzy inference system.	**07**

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