Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER–I(New course)• EXAMINATION – WINTER- 2015

Subject Code: 2710711 **Date: 01/01/2016**

Subject Name: COMPUTER METHODS IN POWER SYSTEM ANALYSIS

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)**	Describe Fast Decoupled Load Flow Algorithm with Flow chart.	**07**
	(b)	Briefly explain the Linear Programming Methods for Optimal Power Flow.	**07**
Q.2	**(a)**	Describe the computational procedure for gradient method of Optimal Power Flow.	**07**
	(b)	Describe the NR algorithm for power flow analysis.	**07**
		OR	
	(b)	Derive the equation for Y_{BUS} in terms of the incidence matrix 'A' and primitive admittance matrix 'y' from first principles.	**07**
Q.3	**(a)**	Describe the contigency analysis procedure with appropriate flow chart.	**07**
	(b)	Discuss the linear sensitivity factor.	**07**
		OR	
Q.3	**(a)**	Define the overload performance index. How is it useful to contigency selection?	**07**
	(b)	Explain technique proposed by Zaborsky for security analysis in power system	**07**
Q.4	**(a)**	Describe the orthogonal decomposition algorithm for state estimation.	**07**
	(b)	Explain the procedure for detection & indentification of bad measurements in relation to state estimation.	**07**
		OR	
Q.4	**(a)**	Derive the equaitons to solve the AC state estimation problem.	**07**
	(b)	Explain the network observability and pseudo measurements in relation to state estimation.	**07**
Q.5	**(a)**	Explain the Forward Euler method with suitable example.	**07**
	(b)	Describe the Runge-Kutta methods for solution of non linear equations.	**07**
		OR	
Q.5	**(a)**	Compare DC power flow with AC power flow. Explain DC power flow in relation with Power electronics applications.	**07**
	(b)	Explain Single step methods, Multi step methods, Explicit methods and Implicit methods of numerical integration.	**07**

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