Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME SEMESTER – I (OLD) EXAMINATION – SUMMER 2017

Subject Code: 710701N **Date:08/05/2017**

Subject Name: Power System Modeling and Simulation

Time:02:30 P.M. to 05:00 P.M. **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)**	Give bus classification stating importance of each in load flow study.	**07**
	(b)	Explain following terms: Branch, Link, Nodes, Graph and Oriented Graph.	**07**
Q.2	**(a)**	Compare GS, NR, Decoupled, Fast Decoupled method of solving load flow equations.	**07**
	(b)	Explain the following numerical integration method (1) Forward Euler's method. (2) Range-Kutta method.	**07**
		OR	
	(b)	Explain Bewleys Lattice diagram with neat sketch. What information are obtained from Bewleys Lattice diagram?	**07**
Q.3	**(a)**	Explain DC load flow study stating its conditions. What are its Merits and Demerits?	**07**
	(b)	What is travelling waves? How are they generated? Discuss the effect of travelling waves on short-circuited transmission line.	**07**
		OR	
Q.3	**(a)**	Ybus is available. Describe the method of getting Z_{bus} from Y_{bus}.	**07**
	(b)	What is Continuation Power Flow (CPF)? How it is different from the normal load flow? What additional information is required for & available from the CPF?	**07**
Q.4	**(a)**	Explain Sparsity techniques and its advantages. Give any one method to store sparse matrix in computer.	**07**
	(b)	What is power system security analysis? Explain different states of power system and state necessary controls to be provided at different level	**07**
		OR	
Q.4	**(a)**	With respect to Power System Security Explain the concept of "Contingency Analysis." Draw the relevant Flow Chart.	**07**
	(b)	Write a short note on Step-Size selection with respect to Numerical integration technique.	**07**
Q.5	**(a)**	Explain the Application of Power System State Estimation by drawing a schematic diagram.	**07**
	(b)	Explain Linear Sensitivity factors, Generation shift factor and line outage distribution factor for Power System Security.	**07**
		OR	
Q.5	**(a)**	Name different contingency selection methods. Explain any one with neat diagram.	**07**
	(b)	How optimal load flow differs from the load flow? Explain any one method used for solution of optimal power flow.	**07**

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