Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (OLD) - EXAMINATION – SUMMER 2017

Subject Code:180906 **Date:06/05/2017**

Subject Name: Advanced Power System II (Department Elective - II)

Time:10:30 AM to 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)**	Explain contingency analysis and security factors of power system.	**07**
	(b)	With the help of analytical concept of voltage stability for a two bus system, define critical receiving end voltage for an uncompensated lossless line transmission system operating at unity power factor	**07**
Q.2	**(a)**	Explain the structure of a deregulated industry. State its advantages.	**07**
	(b)	What is blackout? State the problems occurring in restoration after blackout.	**07**
		OR	
	(b)	Explain structure of a vertically integrated utility. Also mention their dis-advantages.	**07**
Q.3	**(a)**	Derive the relation for mid-point voltage in a line in terms of real power flow and line length.	**07**
	(b)	An inductive load draws power of (2+j1) MVA at a receiving end bus of a radial three phase line. The receiving end bus voltage is 11kV (L-L) at 50Hz and the system reactance is 0.5Ω/phase. Calculate (i) the receiving end current (ii) the regulation (iii) the sending end voltage, and (iv) the short circuit capacity of the system. Assume the system to be lossless.	**07**
		OR	
Q.3	**(a)**	What are the causes of voltage collapse? Compare voltage angle stability and rotor angle stability.	**07**
	(b)	Define power system security. With a neat diagram explain power system static security levels.	**07**
Q.4	**(a)**	Explain least square approximation method for state estimation.	**07**
	(b)	Explain treatment of Bad Data of state estimation.	**07**
		OR	
Q.4	**(a)**	Explain Auto-regressive model and Auto-regressive moving average model for load forecasting.	**07**
	(b)	Explain static and dynamic state estimation of power system.	**07**
Q.5	**(a)**	Discuss reactive compensation methods for heavily loaded and voltage stressed power system to enhance voltage stability.	**07**
	(b)	Explain Long Term Load Predictions using Econometric Models.	**07**
		OR	
Q.5	**(a)**	Explain function of different entities in deregulated power system	**07**
	(b)	Explain in detail as related to power system security: 1. Security assessment 2. Security control	**07**

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