Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (NEW) EXAMINATION – WINTER 2018

Subject Code: 2180909 **Date: 19/11/2018**

Subject Name: Power System Operation and Control

Time: 02:30 PM TO 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	Discuss concept of black out.	**03**
	(b)	Explain classification of Voltage Stability.	**04**
	(c)	Explain meaning of deregulated power system. Discuss its advantages and limitations in relation to vertically integrated system.	**07**
Q.2	**(a)**	List main components of Automatic voltage control scheme.	**03**
	(b)	Define generation shift factor and line outage distribution factor in relation to security analysis.	**04**
	(c)	Draw and explain flow chart for contingency selection.	**07**
		OR	
	(c)	Describe Auto-Regressive Model and Auto- regressive Moving Average Model for load forecasting.	**07**
Q.3	**(a)**	List out important points of electricity act - 2003.	**03**
	(b)	Explain meaning of state estimation.	**04**
	(c)	Draw hierarchy of Load dispatch centers in India. Also list out Locations of NLDC, Regional LDCs and that of ALDCs of Western Region	**07**
		OR	
Q.3	**(a)**	Explain concept of power system security.	**03**
	(b)	Define voltage collapse. Enlist the main factors that contribute the phenomena of voltage collapse.	**04**
	(c)	Enlist different types of reactive power compensation methods for heavily loaded and voltage stressed power systems. Explain static VAR compensators in detail.	**07**

Q.4	**(a)**	Obtain necessary relation between maximum power and line length.	**03**
	(b)	Explain role of load dispatch center in power system.	**04**
	(c)	Describe the various operating states of power systems with necessary diagrams.	**07**

OR

Q.4	**(a)**	Explain speed governor dead-band and its effect on AGC.	**03**
	(b)	Explain restoration process after black out.	**04**
	(c)	Discuss in brief the application aspects of the primary and secondary automatic load frequency control loops.	**07**

Q.5	**(a)**	Explain significance of **'w'** in weighted least square estimation.	**03**
	(b)	List out different sources and sinks of reactive power in power systems.	**04**
	(c)	Explain turbine speed governing mechanism.	**07**

OR

Q.5	**(a)**	Explain least square estimation in brief.	**03**
	(b)	Explain functions of different entities in deregulated power system.	**04**
	(c)	Derive the expression for voltage regulation of a transmission line and explain its relation with reactive power.	**07**

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