GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– VIII (NEW) EXAMINATION – WINTER 2021

Subject Code:2180909   **Date:25/11/2021**
Subject Name:Power System Operation and Control
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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	(a)	Write Importance of frequency and voltage control.	03
	(b)	Draw Block diagram model of load frequency control for isolated power system.	04
	(c)	Explain operation of transmission line for no load condition.	07
Q.2	(a)	Explain the generator shift factor and line outage factor concepts of power system security	03
	(b)	Explain economical dispatch control for single area case.	04
	(c)	What is power system security? Explain Power system security levels in detail.	07
		OR	
	(c)	Enlist different types of reactive power compensation methods for heavily loaded and voltage stressed power system. Explain Static VAR compensator in detail.	07
Q.3	(a)	Explain surge Impedance loading with an expression.	03
	(b)	List practical aspects for describing the reactive power flow problem in voltage collapse.	04
	(c)	Explain contingency analysis of power system.	07
		OR	
Q.3	(a)	Obtain necessary relation between maximum power and line length.	03
	(b)	Provide graphical representation of enhancement of line length and steady state stability limit of uncompensated transmission line and Explain it.	04
	(c)	Establish relationship between voltage regulation and reactive power. Explain how it is governed by short circuits capacity.	07
Q.4	(a)	Define the Surge Impedance loading of Transmission Line.	03
	(b)	List out objectives of State Estimation.	04
	(c)	Explain various applications of State Estimation in power systems.	07
		OR	
Q.4	(a)	Discuss comparative analysis between load flow study and State Estimation Techniques.	03
	(b)	Interpret Identification of Bad data in case of State Estimation.	04

	(c)	Describe Auto-regressive model and Auto-regressive moving average model for load forecasting.	**07**
Q.5	**(a)**	Summarize nature of load forecasting based on lead time with Application.	**03**
	(b)	Discuss concept of blackout.	**04**
	(c)	Discuss estimation of average and trend terms for any load data.	**07**

OR

Q.5	**(a)**	State research and Professional bodies of Indian power sector.	**03**
	(b)	Explain different entities in deregulated power system.	**04**
	(c)	What do you mean by deregulated power system? Discuss advantages and relative limitations to vertical integrated system.	**07**

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