

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER– VII EXAMINATION – SUMMER 2026

Subject Code:3170919

Date:08-06-2026

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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Give comparison between voltage stability and angle stability	03
	(b) Define voltage collapse. List out the main factors which 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	07
Q.2	(a) List main components of Automatic voltage control scheme.	03
	(b) With neat schematic diagram, explain the process of selective frequency control	04
	(c) Explain turbine speed governing mechanism.	07
	OR	
	(c) How do you obtain a relation for maximum power and line angle/line length of power line?	07
Q.3	(a) List out different load forecasting methods.	03
	(b) Discuss Estimation of Average and Trend Terms used for load forecasting.	04
	(c) Explain the concept of contingency Analysis and Derive the equations of sensitivity factors in the system.	07
	OR	
Q.3	(a) What is meant by free governor operation?	03
	(b) List out the method for improving voltage stability	04
	(c) Give flow chart for contingency selection.	07
Q.4	(a) What do you mean by state estimation ?	03
	(b) Interpret Identification of Bad data in case of State Estimation.	04
	(c) Discuss Chi-square test used in state estimation.	07
	OR	
Q.4	(a) What do you mean by Network Observability and Pseudo Measurement?	03
	(b) State and explain the techniques use for data treatment.	04
	(c) Explain Tracking State Estimation of Power Systems.	07
Q.5	(a) What is deregulation? Enlist the advantages of deregulation.	03
	(b) Draw Block diagram model of load frequency control for isolated power system	04
	(c) Explain Milestones of deregulation in the world.	07
	OR	
Q.5	(a) Explain surge impedance loading with it expression.	03
	(b) Summarize nature of load forecasting based on lead time with Application.	04
	(c) Discuss present scenario of power system structure in India.	07
