

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 2180909

Date: 02/05/2018

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.

		MARKS
Q.1	(a) Discuss concept of black out.	03
	(b) Explain restoration process after black out.	04
	(c) For a transmission line connected between two buses, derive the expression of voltage regulation and also prove from the phasor diagram that the Q and V have a strong coupling.	07
Q.2	(a) Explain speed governor dead-band and its effect on AGC.	03
	(b) Draw block diagram model of load frequency control for isolated power system.	04
	(c) Explain turbine speed governing system.	07
	OR	
	(c) Explain contingency analysis of power system.	07
Q.3	(a) What is voltage collapse? Enlist the main factors that contribute the phenomena of voltage collapse.	03
	(b) Discuss the sources of reactive power generation in the power systems.	04
	(c) Describe the various operating states of power systems.	07
	OR	
Q.3	(a) Explain classification of Voltage Stability.	03
	(b) Explain the role of transformer on voltage control of power system.	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) What do you mean by state estimation?	03
	(b) Explain power system security.	04
	(c) What is bad data in state estimation? How bad data are detected and suppress in state estimation.	07
	OR	
Q.4	(a) Explain least square estimation in brief.	03
	(b) Discuss External System Equivalency.	04
	(c) Explain various applications of state estimations in power systems.	07
Q.5	(a) Explain deregulated power system structures.	03
	(b) Give classification based on lead time and forecasting methodology.	04
	(c) Describe Auto-Regressive Model and Auto- regressive Moving Average Model for load forecasting.	07
	OR	
Q.5	(a) Explain load predictions for load forecasting.	03
	(b) Explain function of different entities in deregulated power system.	04
	(c) What do you mean by deregulated power system? Discuss its advantages and relative limitations to vertical integrated system.	07
