

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

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|------------|---|-----------|
| 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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