

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE – SEMESTER – VIII. EXAMINATION – WINTER 2016**

**Subject Code: 180906****Date: 24/10/2016****Subject Name: Advanced Power System II (Department Elective - II)****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.

- Q.1** (a) Define power system security and its four operating states with suitable example **07**  
i) Optimal dispatch ii) Post contingency iii) Secure dispatch iv) Secure post contingency.
- (b) Explain the typical structure of a deregulated power system with necessary diagram. **07**
- Q.2** (a) Explain generation outage and line outage contingency analysis of a power system **07**  
with a flow chart.
- (b) Write short note on Treatment on Bad Data of state estimation. **07**
- OR**
- (b) What is voltage collapse? State main factors that contributes to the phenomena of **07**  
voltage collapse.
- Q.3** (a) Discuss LODF and GSF used in power system security analysis. **07**
- (b) Describe the line only algorithm for power system state estimating. **07**
- OR**
- Q.3** (a) Derive the expression of critical voltage and critical angle at receiving end at voltage **07**  
stability limit.
- (b) Discuss reactive compensation methods for heavily loaded and voltage stressed power **07**  
system to enhance voltage stability.
- Q.4** (a) Discuss the advantages of Deregulated electricity market in detail. **07**
- (b) What is voltage stability? Explain different type of voltage stability. **07**
- OR**
- Q.4** (a) Explain the following i) Network Observability ii) Pseudo measurement. **07**
- (b) Enlist all five levels and explain static security of power system with diagram. **07**
- Q.5** (a) Draw and explain the schematic block diagram of a centralized data acquisition **07**  
system used in power system.
- (b) Discuss power system restoration after a black out. **07**
- OR**
- Q.5** (a) Justify the role of state estimator and explain its Online and Off line application of **07**  
state estimation
- (b) Explain load forecasting methodology and estimation of average and Trend terms. **07**

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