

GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC - SEMESTER-VIII EXAMINATION – SUMMER 2016

Subject Code: X80904**Date: 05/05/2016****Subject Name: Advanced Power System-II****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.

- Q.1** (a) Explain the structure of deregulated industry. **07**
(b) Write a short note on application of power system state estimation. **07**
- Q.2** (a) A lossless three phase 60 Hz transmission line has inductive reactance of $0.325 \Omega/\text{km}$ while capacitive admittance is $5.2 \mu\text{S}/\text{km}$. If the system voltage at the sending end is 500 kV (L-L) and the line length is 300 km, find (1) The electrical line length of the line. (2) The surge impedance of the line. (3) The surge impedance loading. **07**
(b) What is state estimation of power systems? Explain static state estimation of power systems. **07**
- OR**
- (b) Define and classify voltage stability. **07**
- Q.3** (a) What is black out in power system? Describe process of restoration after a black out. **07**
(b) Write a short note on Electricity Act 2003. **07**
- OR**
- Q.3** (a) Explain the structure of a traditional vertically integrated electric industry. **07**
(b) Write a short note on reactive load forecast. **07**
- Q.4** (a) Discuss power system security in brief. **07**
(b) Explain transition from an alert state to an emergency state of a power system with suitable example. **07**
- OR**
- Q.4** (a) Why reactive compensation is required. Explain line series compensation. **07**
(b) Write a short note on load forecasting. **07**
- Q.5** (a) Derive expression of midpoint voltage in a line in terms of real power flow and line length. **07**
(b) Describe power system operating states with the help of a neat figure. **07**
- OR**
- Q.5** (a) Explain load forecasting methodology. **07**
(b) Discuss phenomena of voltage collapse in brief. Enlist the main power system disturbances that contribute to voltage collapse. **07**
