

GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC - SEMESTER-VIII • EXAMINATION – SUMMER 2014

Subject Code: X80904

Date: 31-05-2014

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) What is load forecasting ? write a short note on it. **07**
(b) Explain load forecasting methodology and estimation of average and trend terms. **07**
- Q.2** (a) What is voltage collapse? State main factors that contributes to the phenomena of voltage collapse **07**
(b) What is voltage stability? Explain different type of voltage stability. **07**
- OR**
- (b) Explain power system security in detail. **07**
- Q.3** (a) Derive expression of mid-point voltage of a transmission line in terms of real power flow and line length. **07**
(b) Discuss sensitivity factors used in security analysis. **07**
- OR**
- Q.3** (a) Discuss vertically integrated utility in brief. **07**
(b) Write a short note on Indian scenario of power systems and Electricity Act, 2003. **07**
- Q.4** (a) Describe structure of deregulated power systems in India. **07**
(b) Derive expression of mid-point voltage of a transmission line in terms of real power flow and line length **07**
- OR**
- Q.4** (a) Derive the expression of critical voltage and critical angle at receiving end at voltage stability limit **07**
(b) Write a short note on application of power system state estimation. **07**
- Q.5** (a) For a 2-bus power system with a transmission line, derive expression of voltage regulation. Draw corresponding phasor diagram and with the help of the phasor diagram show that there is strong relationship between reactive power flowing through the line and the voltage drop along the line **07**
(b) Explain transition from an alert state to an emergency state of a power system with the help of suitable example of small power system **07**
- OR**
- Q.5** (a) Discuss power system restoration after a black out. **07**
(b) Explain static and dynamic state estimation of power system. **07**
