

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:180906

Date:07/05/2018

Subject Name:Advanced Power System II (Department Elective - 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 do you mean by deregulated power system? Discuss its advantages and relative limitations to vertical integrated system **07**
- (b)** Explain function of different entities in deregulated power system. **07**
- Q.2 (a)** Describe Least Square Estimation (LSE) and Weighted LSE for estimation of x (vector of n random variables) using another vector y of variables m ($>n$). **07**
- (b)** Explain various applications of state estimations in a power system. **07**
- OR**
- (b)** In relation to state estimation process, explain detection, identification and suppression of bad data in the measurement vector. **07**
- Q.3 (a)** Derive the expression of critical voltage and critical angle at receiving end at voltage stability limit for two bus system. **07**
- (b)** What is voltage stability? Explain different types of voltage stability **07**
- OR**
- Q.3 (a)** Enlist different types of reactive power compensation methods for heavily loaded and voltage stressed power systems. Explain static VAR compensators in detail. **07**
- (b)** What is voltage collapse? Explain the main factors that contribute to the phenomena of voltage collapse. **07**
- Q.4 (a)** Write short note on load forecasting. **07**
- (b)** Explain load forecasting methodology and estimation of average and trend terms. **07**
- OR**
- Q.4 (a)** 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**
- (b)** Derive the expression of critical voltage and critical angle at receiving end at voltage stability limit for two bus system. **07**
- Q.5 (a)** Explain system state classification with relevant figures clearly showing the security levels and transition between different security levels **07**
- (b)** Write short note on sensitivity factors used in security analysis. **07**
- OR**
- Q.5 (a)** How black out occurs in power system? Discuss power system restoration after a black out. **07**
- (b)** Write a short note on Indian scenario of power systems and Electricity Act, 2003. **07**
