

EX - 701
B.E. VII Semester
Examination, December 2014
Power System - II

Time : Three Hours

Maximum Marks : 70

Note: Attempt all questions. One question from each unit. Each question carry equal marks.

Unit - I

1. a) Explain the problems associated with modern interconnected power systems.
- b) Discuss the significance of distributed generation in a power system deregulation environment.

OR

2. Specify the following:
 - a) ATC
 - b) Congestion management
 - c) Deregulation

Unit - II

3. a) Derive the necessary condition for economic operation of n-plants considering transmission losses.
- b) The incremental fuel costs of two units are

$$\frac{dC_1}{dP_1} = 0.1P_1 + 22; 20 \leq P_1 \leq 100 \text{ MW};$$

$$\frac{dC_2}{dP_2} = 0.12P_2 + 16; 20 \leq P_2 \leq 100 \text{ MW};$$

Determine the economic load allocation between the units when the total load on the system is 160 MW. C is in Rs/hr and P is in MW.

OR

4. Give reasons why
 - a) PV bus is considered as PQ bus at times in load flow solution process.
 - b) Real power cannot be transferred over lossless transmission line.
 - c) Load flow study requires slack bus.

Unit - III

5. a) What is single area system? Deduce dynamic models for a single area system. Show the full block diagram.
- b) Two generators rated 200 MW and 400 MW are operated in parallel. The drop characteristics of their generators are 4% and 5% respectively from no load to full load. Determine the load shared by each unit for a load of 500 MW.

OR

6. Specify the following

- a) Governor droop
- b) Load damping
- c) Tie line bias control
- d) ALFC
- e) ACE

Unit - IV

7. a) What is an exciter. What is its role in AVR loop.
- b) Explain AVR with the help of complete block diagram taking into account modern static excitation system of the alternator. •

OR

8. a) Discuss in detail about generation and absorption of reactive power in power system components.
- b) Explain reason for variations of voltages in power system. Suggest any method for voltage profile improvement.

Unit - V

9. a) Distinguish between rotor angle stability and voltage stability.
- b) A 3-phase over head transmission line in which voltages at both ends are kept fixed at 66 kV has a negligible resistance and an inductive reactance of

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20 ohms/ conductor. What is the maximum power that could be transmitted over this line. If this line when working at 60% of the above steady state limit suffers a short circuit which is cleared soon after and circuit restored. What are the limits of angular oscillations for transient stability?

OR

10. a) Derive Swing equation. Discuss its application. *N-R mth*
- b) Discuss the methods for improving transient stability.
