Exam.Code:1017
Sub. Code: 35252

2076

M.E. Electrical Engineering (Power System)

First Semester

EE (PS)-8102: Power System Operation and Control

Time allowed: 3 Hours Max. Marks: 50

NOTE: Attempt any five questions.

x-x-x

1. a) Discuss the importance of reserve planning and load forecasting in maintaining power system reliability and stability.

   b) Discuss why utilities convert chronological load curves into load-duration curves. Discuss their practical significance. (2x5)

2. a) Explain the necessity of voltage and frequency regulation in power system.

   b) Compare cold reserves and hot reserves in terms of their characteristics and applications in power system. (2x5)

3. a) Explain single area block diagram representation of an isolated power system.

   b) Illustrate the dynamic analysis of uncontrolled care single area load frequency control. (2x5)

4. Explain the concept of frequency control in power system operation. How do power system operation used reserves to maintain grid frequency within safe limits. (10)

5. The fuel cost of two units are given by:-

   $F_1 = F_1 (PG_1) = 1.5 + 20PG_1 + 0.1PG_1^2$ Rs/h

   $F_2 = F_2 (PG_2) = 1.9 + 30PG_2 + 0.1PG_2^2$ Rs/h

   If total demand of generator is 200 MW. Find economic load scheduling of the two Units. (10)

6. a) Analyse the economic dispatch of thermal units considering with and without transmission losses.

   b) What do you mean by unit commitment? Briefly explain the constraints on unit commitment. (2x5)

P.T.O.

7. a) Consider the performance dynamic analysis of the LFC of a two-area system with a neat block diagram representation.

   b) Derive the optimization problem for hydrothermal scheduling using the Lagrangian method. Explain the significance of Lagrange multiplies. (2x5)

8. Two alternatives rated 500 HW and 800 HW are operating in parallel with governor droop characteristics of 4% and 5% respectively, from no-load to full load. If a load of 900 HW is connected to the system, find the share of load for each alternator, and also the system operating frequency. Assume no load frequency to be 50 HZ. (10)

x-x-x