PVP 12

Code: **EEPC1T3**

I M.Tech-I Semester-Regular Examinations-April 2013

POWER SYSTEM OPERATION AND CONTROL
(POWER SYSTEM CONTROL & AUTOMATION)

Duration: 3 hours Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1. (a) Explain Optimal thermal and hydel unit commitment problem. Also mention the constraints of thermal and hydel power plants. 7 M

   (b) Give the classification of different techniques involved in unit commitment problem. And briefly explain the priority list scheme method for solving unit commitment problem. 7 M

2. (a) Explain the unit commitment problem formulation and also explain how to solve the problem using dynamic programming approach. 7 M

   (b) Explain the dynamic programming approach in backward sweep with flow chart for solving unit commitment problem. 7 M

3. (a) Derive the expression for load frequency control of isolated single area system of each block and draw the block diagram. 7 M

(b) Briefly explain the control area concept and also explain the steady state and dynamic response of load frequency control of single area control system. 7 M

4. (a) Explain clearly about proportional plus Integral load frequency control of single area power system with a neat block diagram and show that steady state change in frequency is zero. 7 M

(b) Draw the dynamic response of load frequency controller with and without integral control action and also draw the block diagram of control area of load frequency control and economic load dispatch control. 7 M

5. Derive the block diagram for a two- Area system inter connected by a tie line and explain each block. Also deduce the relationship to determine the frequency of oscillations of tie line power and static frequency drop. List out assumptions made. 14 M

6. (a) Briefly explain the steady state representation of two area load frequency control, with necessary equations. 7 M

(b) Determine the primary area load frequency loop parameters for a control area having the the following data.

Total rated area capacity P_r=2000MW
Normal operating load P_D^o=1000MW
Inertia weight H=5.0 S
Regulation R =2.40 Hz/pu MW (All area generators)
Assume load frequency dependency is linear. 7 M

7. (a) Explain the Gradient search technique step by step procedure and also draw the flow chart. 8 M

(b) Briefly explain fuel supply contract in the energy market in present scenario's by paying and taking policies. 6 M

8. (a) Explain interchange evaluation and power pools economy interchange. 7 M

(b) Explain transmission losses in transaction evaluation and also give the remedies to reduce transmission losses for reducing production cost. 7 M