

Code: EEPC1T3

**I M.Tech-I Semester-Regular/Supplementary Examinations
January 2017**

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

Duration: 3 hours

Max. Marks: 70

Answer any FIVE questions. All questions carry equal marks

1. a) What do you mean by unit commitment problem and discuss the various constraints related to UCP. 7 M
b) Discuss the flowchart for priority list method for the solution of UCP. 7 M
2. a) Discuss the mathematical approach for backward dynamic programming method to solve unit commitment problem in power systems. 7 M
b) Discuss the advantages of DP method over priority list scheme. 7 M
3. a) With a neat block diagram explain the load frequency control for a single area system. 7 M
b) Two generators rated 250 MW and 500 MW are operating in parallel. The droop characteristics are 4% and 6% respectively. Assuming that the generators are operating at 50 Hz at no load, how a load of 750 MW would be shared.

- What is the system frequency? Assume free governor action. 7 M
4. a) With a neat block diagram explain load frequency control with economic dispatch control. 7 M
- b) Explain proportional plus integral control for load frequency control for a single area system. 7 M
5. a) Explain tie line bias control for multi area power system. 7 M
- b) Two power stations A & B each have regulation (R) of 0.1 p.u (on respective capacity bases) and stiffness K of 1.0 p.u. The capacity of system A is 1500 MW and of B 1000 MW. The two systems are interconnected through a tie line and are initially at 60 Hz. If there is 100 MW load change in system A, calculate the change in the steady-state values of frequency and power transfer P_{12} without the participation of governor control. 7 M
6. Describe the formulation of the steady state model of a two area system for optimal load frequency control. 14 M
7. a) Explain the operation of N+1 unit system under take-or-pay contract with a mathematical approach. 7 M
- b) Draw the flowchart for gradient method based on simple search for solution of take-or-pay fuel supply contract. 7 M

8. Discuss the following

14 M

a) Interchange evaluation with unit commitment.

b) After-the-fact production costing