Code No : 9A02603/R09

III Year B.Tech II Semester Regular & Supplementary Examinations

Set-4

April/May - 2013

POWER SYSTEM OPERATION & CONTROL

(Electrical & Electronics Engineering)

Time: 3 Hours — Max. Marks: 70

*Answer any **FIVE** Questions*
***All** Questions carry **equal** marks*

- - -

1. Explain the significance of equality and inequality constraints in the economic allocation of generation among different plants in a system.

2. Give a step-by-step algorithm for computing economic allocation of power generation in a thermal system when transmission line losses are considered.

3. In a two plant operation system, the hydro plant is operated for 8 hrs during each day and the steam plant is operated all over the day. The characteristics of the steam and hydro plants are $C_T = 0.025\, P_{GT}^2 + 14\, P_{GT} + 12$ Rs/hr, $W_H = 0.002\, P_{GH}^2 + 28\, P_{GH}$ m³/sec. When both plants are running, the power flow from steam plant to load is 200 MW and the total quantity of water is used for the hydro plant operation during 8 hrs is 220×10^6 m³. Determine the generation of hydro plant and cost of water used. Neglect the transmission losses.

4. Explain about the dynamic interaction between P-f and Q-V loops.

5. Two synchronous generators operate in parallel and supply a total load of 400 MW. The capacities of machines are 200 MW and 500 MW and both have frequency droop characteristics of 4% from no-load to full-load. Calculate the load taken each machine assuming free governor operation. Also find the system frequency at this load.

6. Explain how different gains of integral controller affect the dynamic response of LFC system.

7. Explain how the reactive power is compensated during base loads and peak loads.

8. (a) Explain the advantages of competitive power generation in modern era.

   (b) Explain about restructuring of power systems.