

R09**Code: 9A02603**

B.Tech III Year II Semester (R09) Supplementary Examinations May/June 2016

POWER SYSTEM OPERATION & CONTROL

(Electrical and Electronics Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 Incremental fuel costs in rupees per megawatt hour for two units are given by:
 $dF_1 / dP_1 = 0.1P_1 + 20$ and $dF_2 / dP_2 = 0.12P_2 + 10$
The maximum and minimum loads on each unit are to 25 MW and 120 MW, respectively. Determine the incremental fuel cost and the allocation of load between units for minimum cost when the loads are: (a) 100 MW. (b) 150 MW.
- 2 Obtain the condition for optimum operation of a power system with 'n' plants when losses are considered.
- 3 Explain about the mathematical formulation of long-term hydro thermal scheduling.
- 4 How do the governor characteristics of the prime mover affect the control of system frequency and system load?
- 5 Two generators rated at 100 MW and 200 MW are operating in parallel. The droop characteristics of their governors from no load to full load are 4% and 5% respectively. Assuming that generators are operating at 50 Hz at no load, how a load of 300 MW be shared between the generators? Assume free governor operation. Also find the sharing if both generators have the same droop of 4%.
- 6 (a) Explain how the Integral Controller in load frequency control forms Secondary loop.
(b) Explain how the initial droop in frequency is limited in load frequency control.
- 7 (a) Explain the need of compensation of reactive power in transmission line.
(b) When do you prefer fixed reactive compensation? Why?
- 8 Explain the role of renewable energy sources in Deregulation.
