

Code: 9A02603

B.Tech III Year II Semester (R09) Supplementary Examinations May/June 2017

POWER SYSTEM OPERATION & CONTROL

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 A constant load of 300 MW is supplied by two 200 MW generators 1 and 2, for which the respective incremental fuel costs are:
 $dC_1/d P_{G1} = 0.10 P_{G1} + 20.0$
 $dC_2/d P_{G2} = 0.12 P_{G2} + 15.0$ with power P_G in MW and costs C in Rs/hr.
Determine: (i) The most economical division of load between the generators. (ii) The saving in Rs. per day there by obtained compared to equal load sharing between two generators.
- 2 (a) Explain economic dispatch of thermal plants coordinating the system transmission line losses.
(b) Derive relevant equations and state the significance and role of penalty factor.
- 3 Explain the solution method of long-term hydro thermal scheduling by discretization principles.
- 4 What is the need of reheat type steam turbines for the modern large power systems? Explain with a neat sketch.
- 5 (a) Obtain the transfer function of a speed governor system.
(b) Two generators rated 100 MW and 200 MW are operating in parallel. Their governors are such that for the first one, the frequency drops from 24 to 50 Hz and for the second one 55 to 50 Hz from no load to full load. Determine the loading of generators and frequency of operation when the total load on the system is 250 MW.
- 6 (a) What is area frequency response characteristic?
(b) Explain it in the context of two area system.
- 7 (a) What is series compensation? Explain.
(b) Explain the different aspects of design of series compensator
- 8 What is transaction coordination? Explain.
