Code: 9A02603

R09

B.Tech III Year II Semester (R09) Supplementary Examinations December/January 2014/2015

POWER SYSTEM OPERATION & CONTROL

(Electrical and Electronics Engineering)

Time: 3 hours Max Marks: 70

Answer any FIVE questions

All questions carry equal marks

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1 Explain Input-Output characteristics of a steam generator unit with multivalve effect.

2 A power system operates an economic load dispatch with a system λ of 60 Rs/MWh. If raising the output of plant-2 by 100 kW (while the other output is kept constant) results in increased power losses of 12 kW for the system, what is the approximate additional cost per hour if the output of this plant is increased by 1 MW?

3 Explain decomposition technique for hydro thermal scheduling.

4 Explain about the mathematical modeling of speed governing system.

5 A 100 MVA, 50 Hz turbo alternator operates at no-load at 3000 rpm. A load of 25 MW is suddenly applied to machine and steam valves to the turbine commence to open after 0.6 sec due to the time lag in the governor operation. Assuming inertia constant H = 4.5 kW-sec/kVA of generator capacity, calculate the frequency to which the generated voltage drops before the steam flow commences to increase to meet the new load.

6 Explain how a proportional controller gives the coarse control of frequency.

7 (a) Compare the synchronous condensers with mechanically switched capacitors and inductors.

(b) Distinguish between source and load compensations

8 Explain the operation of Deregulated power system with a neat sketch

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