

Code: R7410204**R07**

IV B.Tech I Semester (R07) Supplementary Examinations, May 2012

POWER SYSTEM OPERATION & CONTROL

(Electrical & Electronics Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

1. (a) Explain the following term with reference to the power plants.
 - (i) Heat – input – output curve.
 - (ii) Heat rate curve.
 - (iii) Incremental input.
 - (iv) Production cost.(b) A power system consists of two 120 MW units whose input data are represented by the following equations:
 $F_1 = 0.04 p_1^2 + 22P_1 + 800 \text{ Rs/hr}$
 $F_2 = 0.04 p_2^2 + 22 P_2 + 1000 \text{ Rs/hr}$
If the total received power is 200MW and the transmission losses are neglected, determine the load sharing between the units for most economic operations.
2. Starting from the fundamentals, derive the transmission loss formulae for a system consisting of 'M' generating plants supplying several loads inter connected through a transmission network.
3. Explain different constraints to be considered for mathematical modeling of Hydro thermal scheduling.
4. Derive and explain the model of a speed governing system and represent it by a block diagram.
5. (a) Explain the necessity of keeping frequency constant.
(b) Obtain the dynamic response of load frequency control of a isolated power system for first order approximation.
6. Sketch and explain the block schematic of a two area system. Derive the necessary equations.
7. (a) Explain proportional plus integral control of single area system with neat block diagram and derive necessary equations.
(b) A 100 MW generator has a regulation parameter 'R' of 5%. By how much will the turbine power increase if the frequency drops by 0.1 Hz with the reference unchanged.
8. (a) Explain clearly what you mean by compensation of line and discuss briefly different methods of compensation.
(b) What do you mean by reactive power compensation in transmission line?
