Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 08

M.Tech.(EE)/(Power Engg.) (Elective-IV) (Sem.–3)

POWER SYSTEM PLANNING

Subject Code : ELE-519/PEE-523

M.Code : 36014

Time : 3 Hrs. Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

Q1. What are short term load forecasting and long-term load forecasting? Explain with the different forecasting components being used. [20]

Q2. For the system shown in fig (i), $I_1 = 0.8/0$ p.u. and $I_2 = 1.0/0$ p.u. Line impedances are 0.04 + j0.12 p.u., 0.03 + j0.1p.u. and 0.03 + j0.12 p.u. for the sections a,b and c respectively. The voltage at load bus is 1/0 p.u. Find the loss coefficients and the transmission loss. [20]

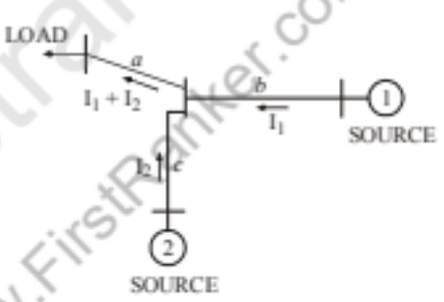

Fig (i)

Q3. (a) How do the equations for economic operation of thermal plant get modified if the minimum and maximum loadings of generators are specified? [6]

(b) A system has three generators whose cost curves can be described by the following equations : [7]

$C_1 = 450 + 6.5P_1 + 0.0013P_1^2$ Rs/hour

$C_2 = 300 + 7.8P_2 + 0.0019P_2^2$ Rs/hour

$C_3 = 80 + 8.1P_2 + 0.005P_3^2$ Rs/hour

Where C_1, C_2 and C_3 are the costs and P_1, P_2, P_3 are outputs in MW of units 1,2,3 respectively. If total load of 800MW is to be shared by the three units, find optimum scheduling.

(c) For the above three generator system, the maximum and minimum outputs are specified as under : [7]

Unit 1	Max. Output	600MW
	Min Output	100MW
Unit 2	Max. Output	400MW
	Min Output	50MW
Unit 3	Max. Output	200MW
	Min Output	50MW

Find the optimum scheduling.

Q4. What is equal incremental cost criterion? Discuss the importance of proper load allocation in power plants. What information must be available for optimum load allocation? [20]

Q5. Discuss the methods commonly used for deciding the load allocation between the units of a power plant. How can the effect of transmission loss be included in optimum scheduling in power plants? [20]

Q6. (a) What are the characteristics of Interactive Graphic systems? Give examples of the use of graphic systems in line design and power-flow analysis. [10]

(b) Discuss automated transmission planning using the DC power flow model as the linear system model. [10]

Q7. (a) What is meant by co-generation? What are the reasons for promoting cogeneration in decentralized environment? Discuss. [10]

(b) Discuss the characteristics of steam generation units and suggest methods for improving unit efficiency and reliability of the steam plant. [10]

Q8. Write short notes on :

(a) Emerging power interchange [10]

(b) Distribution automation [10]

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.