

Total No. of Questions : 08

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

POWER SYSTEM PLANNING

Subject Code : ELE-519/PEE-523

Paper ID : [E0496]

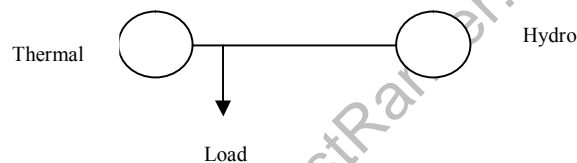
Time : 3 Hrs.

Max. Marks : 100

INSTRUCTION TO CANDIDATES :

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

1.
 - (a) Explain the structure of Power System. (7)
 - (b) What is load forecasting? Explain various forecasting models. (7)
 - (c) Write about electric utility as an industry. (6)
2.
 - (a) What are the advantages of hydro–thermal coordination? (5)
 - (b) A two plant system has characteristics



$$C_1 = (30 + 0.03 P_1) P_1 P_o / \text{hr.}$$

$$W_2 = (8 + 0.004 P_2) P_2 \text{ m}^3/\text{sec.}$$

Find the generation schedule of Hydro and Thermal plants, daily water used by hydro plants, $\gamma_2 = P_0/4 \text{ hr. /m}^3/\text{sec}$. The load is 1000 Mw for 24 hours a day. (15)

3.
 - (a) What is unit commitment? How is it employed in Thermal units? (7)
 - (b) Discuss the dynamic programming technique for optimization. (7)
 - (c) Discuss the link between reliability and generation expression. (6)
4.
 - (a) What is Automatic Transmission System Expansion Planning? What are the various types of transmission expansion planning system? (10)
 - (b) How is Transmission planning employed using Interactive graphics? (10)

5. (a) What are the primary design consideration for primary and secondary distribution system? Explain in detail. (10)
(b) Write a note on application of capacitors to distribution system. (10)
6. (a) How is optimal power flow different from load flow in power system? How do we obtain optimal scheduling of generation units? (10)
(b) Draw line diagram of a substation and enumerate the components and their functions. (10)
7. (a) What is voltage regulation in distribution system? How can the voltage drop be minimized in a distribution system? (10)
(b) How is cost analysis done in generation system? (10)
8. Write short notes on :
(a) Load characteristics and its significance in Power system. (10)
(b) Generation Expansion Planning. (10)