Exam.Code:0937
Sub. Code: 33793

2125

B.E. (Electrical and Electronics Engineering)

Seventh Semester

EE-709: Electrical Power Generation

Time allowed: 3 Hours Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

1. Answer the following:-
   (a) What are the factors to be considered for selection of the site for a thermal power station?
   (b) A generating station has a connected load of 450 MW and a maximum demand of 250 MW; the units generated being $615*10^6$ per annum. Calculate (i) the demand factor and (ii) load factor.
   (c) State the difference between two-part tariff and maximum demand tariff.
   (d) Explain the effect of load factor on the cost of energy generation.
   (e) Define scheduling in hydro-thermal coordination. (5x2)

UNIT - I

2. A residential consumer has a connected load of 10 lamps each of 100 W at his premises. His demand is as follows:

From midnight to 5 a.m.	–	100 W
From 7 p.m. to 9 p.m.	–	900 W
From 5 a.m. to 6 p.m.	–	No load
From 9 p.m. to midnight	–	400 W
From 6 p.m. to 7 p.m.	–	800 W

   (a) Plot the load curve.
   (b) Find energy consumption during 24 hours.
   (c) Calculate the demand factor, average load, maximum load, and load factor. (10)

3. Discuss the advantages of power factor improvement and explain the method of power factor correction using capacitors. (10)

4. A certain plant has a fixed cost of Rs. 4×10^4 and a salvage value of Rs. 4×10^3 at the end of a useful life of 20 years. What would be the valuation halfway through its life based on:
   (a) Straight line depreciation method
   (b) Reducing balance depreciation method
   (c) Sinking fund depreciation at 6% compounded annually? (10)

P.T.O.

UNIT - II

5. Explain the present worth method and capitalized cost method used in the selection of power plants. Compare their applications. (10)

6. The estimated total annual operating costs for two proposed stations are given by the following expressions:

   Station A : Rs. (100,000 +60*kW +0.01kWh)

   Station B: Rs. (60,000 + 35*kW +0.02 kWh)

   where kW represents the capacity of the station and kWh the total annual energy output. The stations are to be used to supply a load having load duration curve as shown in Fig. 1. The ordinate of a point on this curve represents a certain load on the station and its abscissa represents the number of hours per year during which the load is equal to or exceeds this amount. Which station should be used to supply the peak load, what should be its installed capacity and for how many hours per year should it be in operation to give the minimum total cost per unit generated? Calculate the total cost per unit generated under these conditions.

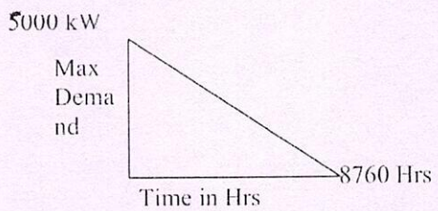

Fig. 1.

(10)

7. Explain hydro-thermal coordination in power systems. Discuss the advantages of combined operation of hydro and thermal plants. (10)

x-x-x