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

Total No. of Questions : 18

B.Tech. (EE) (2012 Onwards) / (EE) PT /
(Electrical & Electronics) (2012 Batch) (Sem.–5)

ELECTRIC GENERATION & ECONOMICS

Subject Code : BTEE-502
M.Code : 70555

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Answer briefly :

1. What is the difference between base load and peak load?
2. Define Demand Factor?
3. What is short term load forecasting?
4. Differentiate between fixed costs and operating costs.
5. What are the causes of low power factor?
6. Why is the availability of water important for a thermal plant?
7. What is equal incremental cost criterion?
8. What do you mean by basic rule curve?
9. What are the different causes of air pollution?
10. Differentiate between topping and bottoming cycles.

SECTION-B

11. The annual load duration curve of a small hydro-plant shows 438×10^4 kWh of energy during the year. It is a peak load plant with 20% annual load factor. Find station capacity. If plant factor is 15%, find reserve capacity of the plant.

12. Discuss the role of load factor on the cost of electrical energy.

13. A power station has an induction generator giving a constant output of 2 MW at 0.9 power factor leading. In addition there is a synchronous generator. Find the power factor of synchronous generator when the total load on the station is (a) 10 MW (b) 5 MW at 0.8 lagging power factor each.

14. Explain the difference between operating reserve and spinning reserve.

15. Discuss the methods commonly used for deciding the load allocation between the units of a power plant.

SECTION-C

16. (a) Discuss the method to determine the capacity of the run off river plant and steam plant when they supply a given load jointly.

    (b) What is the significance of no spill rule curve?

17. (a) How the costs are allocated in cogeneration systems?

    (b) What do you mean by inplant cogeneration? Also discuss the benefits of cogeneration systems.

18. A 400 V 3-phase star connected induction motor draws a current of 25 A at 0.8 lagging power factor under full load condition. It is desired to install a bank of capacitors to raise the full load overall power factor of 0.9 lagging. Find the kVAR rating of the star connected capacitor bank and the value of each capacitor.

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.