Practice Questions

Unit-4

1. Describe the causes and disadvantages of low power factor.

2. Explain the devices used to improve the power factor in detail.

3. Explain any three types of Tariff used to charge the power utilization.

4. Explain the good practices in lighting. Give example.

5. Explain the desirable characteristics of a Tariff. And also explain simple and flat rate Tariff.

6. Explain the broad features of ABT design.

7. Write a detailed note on energy efficient motors.

8. Derive an expression for most economical power factor considering constant active power. Draw relevant vector diagram.

9. A factory load consists of the following:
   (i)   An induction motor of 75kW with 0.75 p.f. lagging and efficiency of 80%.
   (ii)   A synchronous motor of 37 kW with 0.9 p.f. lagging and efficiency of 90%.
   (iii)   Lighting load of 50 kW at unity p.f.
   Find the annual electrical charges if the tariff is Rs.100 per kVA of maximum demand per annum plus Rs 0.5 per kWh, assuming the load to be steady for 2000 hours in a year.

10. An industrial load takes 1,00,000 units in a year, the average power factor being 0.8 lagging. The recorded maximum demand is 500kVA. The tariff is Rs.120 per kVA of maximum demand plus Rs.0.25 per kWh. Calculate the annual cost of supply and find out the annual saving in cost by installing phase advancing plant costing Rs.50 per kVAR which raises the p.f. from 0.8 to 0.95 lagging. Allow 10% per year on the cost of phase advancing plant to cover all additional costs.

11. A factory has a maximum load of 240 kW at 0.7 p.f. lagging with an annual consumption of 50,000 units, if the tariff is Rs. 50 per kVA of maximum demand plus Rs. 0.1 per unit, calculate the flat rate energy consumption. What will be annual saving if p.f. is raised to unity?

12. The monthly readings of a costumer's meter are as follows:
    Maximum demand= 50kWh
    Energy consumed= 36,000 units
    Reactive energy = 23,400 kVAR

If the tariff is Rs. 100 per kW of maximum demand plus 6 paise per unit plus 0.5 paise per unit for each 1% of power factor below 86%, calculate the monthly bill of the consumer.

Unit-5

1. With the help of flow diagram explain the concept of DSM planning and implementation.
2. Write detailed note on customer acceptance on DSM
3. What are the different techniques of DSM? And explain strategic energy conservation techniques of DSM.
4. Discuss in detail the implementation issues of DSM.
5. Explain the concept of end use energy conservation in detail.
6. What are the energy efficient Technology in electrical system? Explain variable speed drives method in detail.
7. Explain plant level organization of energy conservation program.
8. Write a detailed note on integrated energy policy.