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**Eighth Semester B.E. Degree Examination, June/July 2018**  
**Energy Auditing and Demand Side Management**

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting  
atleast TWO questions from each part.**

**PART – A**

- 1 a. Explain the energy consumption and discuss how the energy conservation is achieved using different strategies. (10 Marks)
- b. Describe the three pronged approach for energy management in an industry. (06 Marks)
- c. Write a short note on distribution codes. (04 Marks)
- 2 a. What is time value money concept? Explain in brief. (04 Marks)
- b. Explain the following methods to determine the depreciation :  
i) Sinking fund method ii) Sum of year digit method. (08 Marks)
- c. An amount of Rs. 10000/- is accumulated in an account. The credit card company charges 14% nominal annual interest compounded monthly. Only Rs. 200/- can be affordable to pay per month. How many months will it take to pay off and how much money is being paid as an interest? (08 Marks)
- 3 a. Define the energy audit and list its objectives. (06 Marks)
- b. Describe the energy use profiles with neat relevant diagrams. (08 Marks)
- c. Explain the energy audit in the following systems :  
i) Illumination system ii) heating, ventilation and air cooling (HVAC) system. (06 Marks)
- 4 a. Explain the power triangle also explain the significance of horse power in brief. (04 Marks)
- b. With neat single line diagram explain the power flow concept. (10 Marks)
- c. Describe the electrical system optimization. (06 Marks)

**PART – B**

- 5 a. Explain the causes of low power factor and also mention the effects of low power factor. (06 Marks)
- b. Describe the location of capacitor bank for the power factor improvement with neat relevant diagram. (08 Marks)
- c. A three phase, 415volts, 50Hz, 5KW induction motor has pf of 0.75 lagging. A bank of capacitors is connected in delta across the supply terminals, and pf is raised to 0.9 lagging. Determine the KVAR rating of the capacitor bank in each phase. (06 Marks)
- 6 a. What is the lighting basics? Explain the Lumen method for illumination design. (06 Marks)
- b. Describe the energy efficient motors with neat relevant diagrams and also mention its design improvements adopted. (08 Marks)
- c. Calculate the annual bill a of a consumer, whose maximum demand is 150KW, power factor 0.85 lagging and load factor is 70%. The tariff is Rs 85/- per KVA of maximum demand plus paisa 25/- per KWh consumed. (06 Marks)
- 7 a. Explain the three different types of load control techniques used for load management. (06 Marks)
- b. Describe the three different types of tariff option available for DSM programme. (06 Marks)
- c. Discuss the energy conservation opportunities in agriculture and illumination sector. (08 Marks)
- 8 a. Describe any five energy efficient equipment. (10 Marks)
- b. With a neat block diagram, explain the division level management and organization of energy conservation awareness programme. (10 Marks)

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