USN ☐☐☐☐☐☐☐☐☐☐                                          **10EE842**

# 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 n 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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