U.S.N

P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belagavi)
Eighth Semester, B.E. - Electrical and Electronics Engineering
Semester End Examination; May/June - 2018
Energy Auditing and DSM

Time: 3 hrs.   *Max. Marks: 100*

Note: Answer **FIVE** full questions, selecting **ONE** full question from each unit.

UNIT - I

1 a. With respect to the supply system, summarize the points in the distribution code.   8

b. What is ABT? What are the broad features of ABT design?   8

c. How much money must be deposited in a S.B. account so that Rs 2, 00,000 can be withdrawn after 12 years from now, if the interest rate is 9% compounded annually?   4

2 a. Explain the energy conservation techniques used to reduce the energy costs.   7

b. Write a note on :

i) Issues addressed by energy conservation act. 2001

ii) Payback analysis and its advantages   8

c. A plant costs Rs. 7.56×10^5 and its estimated that after 25 years it will have to be replaced by a new one at that instant its salvage value will be Rs 1.56×10^5. Calculate;

i) The annual deposit to be made in order to replace the Plant after 25 years

ii) The value of the plant after 10 years using straight line depreciation method   5

UNIT - II

3 a. Explain ten steps methodology for the detailed energy auditing.   10

b. What is energy use profile? What are the audits required for constructing the energy use profile?   6

c. Explain any three energy audit instruments.   4

4 a. Define energy audit. Explain the different types of energy audit and the need for energy auditing.   12

b. Explain the different steps of presenting energy audit results.   8

UNIT - III

5 a. Mention the causes of low power factor.   6

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

c. A synchronous motor improves the power factor of a load of 300 kW from 0.7 lagging to 0.9 lagging. Simultaneously the motor carries a load of 80 kW. Find;

i) The leading kVAR taken by the motor   ii) kVA rating of the motor

iii) Power factor at which the motor operates   6

6 a. Write a note on :

   i) Synchronous condenser   ii) Energy efficient motors   16

   iii) Good practices in lighting   iv) Location of capacitors with power distribution diagram

  b. A single phase motor connected to 400 V, 50 Hz supply takes 31.7 A at a power factor of 0.7 lagging. Calculate the capacitance required parallel with the motor to raise the power factor to 0.9 lagging.   4

UNIT - IV

7 a. What is DSM? What is the scope of DSM? How did the concept of DSM evolved?   8

  b. Explain the tariff option for DSM implementation.   6

  c. Explain the factors which influence customer acceptance of DSM.   6

8 a. Mention the benefits of DSM from consumer supplier and society point of view.   8

  b. With necessary flow diagram, explain planning implementation of DSM.   12

UNIT - V

9 a. Explain the following :

   i) Peak clipping

   ii) Valley filling   12

   iii) Strategic energy conservation.

  b. Explain energy conservation opportunities in;

   i) Agricultural sector   8

   ii) Industrial sector

10 a. With relevant diagram, explain plant level and corporate level organization of energy conservation programme.   10

  b. Explain the factors which restrain the consumers to move towards DSM.   10

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