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10EE842

Eighth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Energy Auditing and Demand Side Management

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

PART – A

1 a. Explain the classification of energy sources giving examples for each. **(08 Marks)**
b. Explain the three pronged approach to energy management. **(06 Marks)**
c. Explain the broad features of Indian electricity rule 1956. **(06 Marks)**

2 a. Discuss the different classification of costs of electrical energy generated. **(08 Marks)**
b. Explain pay back analysis. **(04 Marks)**
c. The equipment in a power station costs Rs. 15,60,000/- and has a salvage value of Rs. 60,000/- at the end of 25 years. Determine the depreciation value of the equipment at the end of 20 years by the following methods :
i) Straight line method and ii) Diminishing value method. **(08 Marks)**

3 a. Define energy Audit. Explain the detailed energy audit activity. **(08 Marks)**
b. Discuss the role of an energy management team. **(04 Marks)**
c. What are the various measurement and instruments used in energy audit? **(08 Marks)**

4 a. With a neat diagram, explain the typical AC power supply scheme. **(08 Marks)**
b. With a vector diagram, mention the various components of power triangle. **(04 Marks)**
c. Define : (i) Plant energy performance (ii) Production factor. **(04 Marks)**
d. Explain power flow concept. **(04 Marks)**

PART – B

5 a. List and explain disadvantages of low power factor. **(08 Marks)**
b. Mention the desirable characteristics of a tariff. **(04 Marks)**
c. A 3 phase synchronous motor is connected in parallel with a load of 500kW at 0.8 power factor lagging and its excitation is adjusted until it raises the total power factor to 0.9 lag. If the mechanical load on the motor including losses takes 125kW, calculate the KVA input to the motor. Draw phasor diagram for the conditions. **(08 Marks)**

6 a. What is ABT? Write the broad features of ABT design. **(08 Marks)**
b. Discuss about the advantages and selection criteria of energy efficient motors. **(06 Marks)**
c. Mention the various good practices in lighting system leading to energy conservation. **(06 Marks)**

7 a. Briefly explain the DSM planning and implementation. **(10 Marks)**
b. Explain peak clipping, valley filling and load shedding. **(10 Marks)**

8 a. Explain energy efficient technology in electrical system. **(10 Marks)**
b. Explain plant level organization of energy conservation programme. **(10 Marks)**

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28 JAN 2020