10EE842

Eighth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Energy Auditing and Demand Side Management

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. Discuss the present energy scenario in India. **(06 Marks)**
   b. Explain the energy conservation techniques used to reduce energy costs. **(06 Marks)**
   c. Which are the issues addressed by the Energy Conservation Act. 2001? **(08 Marks)**

2 a. What is time value of money concept? What are the different cash flow models? **(08 Marks)**
   b. A motor drive consumes 40,000 units per annum. By upgrading to high efficiency spare parts the consumption can be reduced by 5%. The additional cost of upgradation is Rs.35,000. Assume energy charge of Rs.5 per unit and life of motors 15 years. Is the change justified? Take rate of interest/return = 20% use annual cost method. **(08 Marks)**
   c. What is depreciation and what are the causes of depreciation? **(04 Marks)**

3 a. Give the ten-step methodology for detailed energy audit and explain. **(10 Marks)**
   b. Write short note on energy audit instruments. **(10 Marks)**

4 a. With a layout diagram, explain the typical A.C. power supply scheme. **(10 Marks)**
   b. With a vector diagram, explain various components of power triangle. **(05 Marks)**
   c. What is Plant Energy Performance (PEP)? Define the production factor. **(05 Marks)**

PART – B

5 a. What are the disadvantages of low power factor? What are the different methods to improve the power factor? **(06 Marks)**
   b. A single phase induction motor takes a current of 20A at p.f. of 0.75 lagging from 230V, 50Hz supply. What value must a shunt condenser have to raise the p.f. to 0.95 lagging the load remaining same? **(08 Marks)**
   c. Write a note on energy efficiency motors. **(06 Marks)**

6 a. What is ABT? What are the broad features of ABT design? **(10 Marks)**
   b. The load on an installation is 800kW, 0.8p.f. lagging which works for 3000 hours per annum. The tariff is Rs.100 per KVA plus 20 paise per kWh. If the power factor (p.f.) is improved to 0.9 lagging by means of loss-free capacitors. Costing Rs.60 per KVAR. Calculate the annual saving effected. Allow 10% per annum for interest and depreciation on capacitors. **(10 Marks)**

7 a. With flow diagram explain briefly DSM planning and implementation. **(08 Marks)**
   b. What is Demand Side Management (DSM)? Mention the benefits of DSM. **(06 Marks)**
   c. Explain energy conservation opportunities in agriculture sector. **(06 Marks)**

8 a. Explain peak clipping, valley filling, load shedding and strategic energy conservation. **(10 Marks)**
   b. Discuss tariff options for DSM. Which tariffs promote DSM? **(10 Marks)**