Total No. of Questions : 8]

SEAT No. :

PE2298

[Total No. of Pages : 2

[6584]-206
B.E. (Mechanical)
ENERGY AUDIT AND MANAGEMENT
(2019 Pattern) (Semester - VIII) (Elective -V) (402050B)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8,***
2) ***Neat diagrams must be drawn whenever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) Describe the factors influencing costing of coal, compressed air, natural gas, and electricity. **[9]**

b) Explain the term -Internal Rate of Return (IRR) with its advantages and disadvantages. **[8]**

OR

Q2) a) What is the NPV for a project of life 3 years, which requires a capital investment of 60000 and yields 30000 in the first year, 40000 in the second year, and 50000 in the third year, if the interest rate is 7 %? **[9]**

b) Explain the 'Simple Payback Period' method of financial analysis with its advantages and limitations. **[8]**

Q3) a) Calculate pump efficiency from the data given: pump flow is 0.50 m^3/s, power absorbed: 320 KW, suction head +1.1 m, Delivery head 50 m, motor efficiency 85%,type of drive: direct coupled, density of water 996 kg/m^3. **[9]**

b) Describe the energy conservation opportunities in DG sets. **[9]**

OR

Q4) a) Enlist the types of steam traps and explain any two with a neat sketch. **[9]**

b) What are the energy conservation opportunities in the Refrigeration and HVAC system? **[9]**

P.T.O.

Q5) a) What are the advantages of power factor (PF) improvement in electrical systems? Explain how PF is improved. **[9]**

b) Discuss essential components of electric tariff and explain the "Two-part tariff'. **[8]**

OR

Q6) a) What are the types of lamps used in lighting systems? Write down their features with typical applications. **[9]**

b) List the types of motors and explain the different losses occurring in electric motors. **[8]**

Q7) a) Write a short note on Trigeneration and write its advantages. **[9]**

b) What is the need of cogeneration? Explain cogeneration in detail with suitable examples. **[9]**

OR

Q8) a) Write a note on the shell-tube heat exchanger and plate heat exchanger. **[9]**

b) Explain the Waste Heat Recovery (WHR) in the industry and write its direct and indirect benefits. **[9]**