Total No. of Questions : 12]

SEAT No. :

P3065

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B.E. (Mech. Engg.)

ENERGY AUDIT AND MANAGEMENT

(2012 Course) (End Sem.) (Semester - I) (Elective - I) (402044 A)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10, Q11 or Q12.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat figures wherever necessary.***
4) ***Use of Scientific Calculators is allowed.***

Q1) a) Write a short note on Energy action Planning. **[5]**

b) Describe relation between Environment and Energy. **[5]**

OR

Q2) a) Explain Four Principles of Energy Management. **[5]**

b) Write short note on Energy conservation act 2001. **[5]**

Q3) a) Explain Energy Conservation opportunities in Boiler. **[5]**

b) Explain Need of Energy Audit in India. **[5]**

OR

Q4) a) Explain Energy Conservation opportunities in Compressed air system. **[5]**

b) Why Pre-audit and Post-audit is important during Energy audit. **[5]**

Q5) a) What is the NPV of a project, (life 2 year) which requires an investment of Rs. 70,000 and yield Rs. 50,000 in the 1st year and Rs. 50,000 in the next year, if the Interest rate is 10%. **[5]**

b) A sum of Rs. 1,20,000 is deposited in a bank at the beginning of a year. The bank pays 6% interest annually. How much money is in the bank account at the end of the fifth year, if no money is withdrawn? **[5]**

OR

P.T.O.

Q6) Explain following financial analysis methods: **[10]**

a) Net Present Value.

b) Return on Investment.

c) Internal rate of return.

d) Simple Payback period.

e) Time Value of Money.

Q7) a) Calculate Thermal Efficiency of boiler and Evaporation ratio by Direct method with the help of following data: **[6]**

Type of boiler : Coal fired.

Quantity of Steam generated: 11 TPH.

Quantity of Coal consumed: 1.6 TPH.

Steam Pressure and Temperature: 10 kg/cm^2 (gauge)/190ºC.

Feed water Temperature: 81 ºC.

GCV of Coal: 12500 KJ/kg.

Enthalpy of saturated steam at 10 Kg/cm^2 pressure: 1685 KJ/kg.

Enthalpy of feed water: 310 KJ/kg.

b) Explain the following parameters in the brief: **[6]**

i) Excess air ratio.

ii) Stochiometric air quantity.

iii) Balanced draught

OR

Q8) a) Explain different efficient steam distribution systems. **[6]**

b) List the energy saving opportunities in pumping system. **[6]**

Q9) a) Explain the term Copper losses and Luminous Efficiency. **[7]**

b) Write a short note on the Electricity Act 2003. **[7]**

OR

Q10)a) Explain the selection and location of Capacitors for improving power factor. **[7]**

b) Explain the term Color Rendering Index (CRI) and Igniters. **[7]**

Q11)a) What are the heat wheels? Explain with neat sketch. **[7]**

b) Write short note on Carbon Credit. **[7]**

OR

Q12)a) Describe cogeneration cycles with suitable practical examples. **[7]**

b) Explain CDM project with flow chart. **[7]**