

Total No. of Questions : 12]

SEAT No. :

P3065

[5059]-534

[Total No. of Pages : 3

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 How much money is in the bank account at the end of the fifth year, if no money is withdrawn?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/cm² (gauge)/190°C.

Feed water Temperature: 81 °C.

GCV of Coal: 12500 KJ/kg.

Enthalpy of saturated steam at 10 Kg/cm² 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) Stoichiometric 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]

