Total No. of Questions : 6]

SEAT No. :

P4955

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BE/In Sem. - 17

B.E. (Mechanical)

ENERGY AUDIT AND MANAGEMENT

(Elective - I) (Semester - I) (402044 A) (2012 Course)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***All questions carry equal marks.***
5) ***Assume suitable data, if necessary.***

Q1) a) Write a short notes on: **[5]**

i) Ozone layer depletion.

ii) Greenhouse effect.

b) Explain energy consumption pattern of Indian industry. **[5]**

OR

Q2) a) Explain the need for renewable energy. **[5]**

b) Write short notes on: **[5]**

i) Energy action planning.

ii) Energy security.

Q3) a) Write down the types of energy audit and explain walk through or preliminary energy audit. **[5]**

b) Describe energy conservation opportunity in HVAC system. **[5]**

OR

Q4) a) Explain different instruments and equipments used for energy audit. **[5]**

b) What are the different energy conservation opportunities in boiler? **[5]**

P.T.O.

Q5) A company invests Rs. 12 lakhs and completes an energy efficiency project at the begining of year 1. The firm investing it's own money and expects an Internal Rate of Return (IRR) of at least 24% on constant positive annual net cash flow of Rs. 2.5 lakh over a period of 5 years starting from year 1. **[10]**

a) Will project meet the firm's expectations?

b) What is IRR of this measure?

OR

Q6) a) Find the simple payback period when Rs. 12,000/- is required as investment for replacing 60 incandescent lamps (40 w) by 9 w CFLS (60 numbers) producing the same lumen output. Assuming 10 hrs of operation period daily and electricity charges at Rs. 4/- per kW. **[5]**

b) Calculate net present value of a project at a discount rate of 12% with an investment of Rs. 60000/- at the beginning of the Ist year and saving of Rs. 28000 and Rs. 41000 at the end of the first and second year respectively. **[5]**

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