22312

24225

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following : **10**

a) Define calorific value and give its unit.

b) List any four sources of renewable energy.

c) Define commercial and non-commercial energy.

d) Explain the concept of plant economics.

e) Define –

i) Direct cost

ii) Indirect cost

f) List the factors affecting cost estimation.

g) Give any four instruments used for energy audit.

Marks

2. Attempt any THREE of the following : **12**

a) Explain solar water heater with a neat sketch.

b) Explain the important properties of fuel.

c) Describe energy conservation for the industrial applications.

d) Explain the concept of profitability in details.

3. Attempt any THREE of the following : **12**

a) Describe the importance of energy policy for industries.

b) Give any four new energy sources with their industrial applications.

c) Describe the importance of Economics in market evaluation.

d) List the different types of energy audit and give its uses.

4. Attempt any THREE of the following : **12**

a) 900 Kg/hr coal used in boiler for steam generation. Calculate oil mass flow rate required for boiler from given data when it is switched from coal to oil.

Given Data : Calorific value of coal = 8000 kcal/kg

Calorific value of oil = 10200 kcal/kg

Operational efficiency based on coal = 70%

Operational efficiency based on oil = 80%

b) Illustrate the importance of wind energy as a future energy.

c) Explain different energy sources with its application.

d) Describe the importance of energy security for nation.

e) Explain the duties and responsibilities of energy manager and auditor in industry.

Marks

5. Attempt any TWO of the following : **12**

a) Describe future energy system and clean energy technologies in details.

b) Sketch tree diagram showing cash flow for chemical industrial operation. Explain concept of Tax and insurance.

c) Explain the concept of interest and types of interest in details.

6. Attempt any TWO of the following : **12**

a) Define cost accounting. Explain basics and procedure of accounting.

b) Give the methods of calculation of depreciation and explain any two of them with example.

c) A heat exchanger costs Rs. 50 lakhs is fabricated in India. The exchanger is estimated to have useful life of 10 years and a salvage value of Rs. 6 lakhs. If the same unit is imported, it shall cost Rs. 160 lakhs and would have an useful life of 20 years and a salvage value of 40 lakhs. Suggest which among the two would be a better option of purchase and why (I = 8% p.a.)

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