

CERTIFICATE IN ENERGY TECHNOLOGY AND MANAGEMENT (CETM)**Term-End Examination**

December, 2019

OEY-003 : ENERGY MANAGEMENT : AUDIT AND CONSERVATION

Time : 3 hours

Maximum Marks : 70

- Note : (i) Attempt any seven questions.
(ii) All questions carry equal marks.
(iii) Use of Scientific calculator is permitted.
(iv) Assume suitable data, if any.*

1. What is Energy Management ? Explain its Principles. 10
2. Discuss various Temperature measuring devices with their range and accuracy. 10
3. Discuss various housekeeping measures to conserve energy. 10
4. Describe heat balance in a boiler with schematic diagram of Combustion in boiler. 10
5. (a) A Three phase motor (15 kW) has the name plate data as 415 V, 30 amp and 0.85 PF. Actual energy audit measures these values as 415 V, 14 amp and 0.75 PF when motor was in use. Determine the motor loading. 5+5=10
(b) How is energy conservation beneficial to the environment ?
6. What are Short term and long term energy conservation measures ? Explain with suitable example. 10
7. Explain in brief the energy audit of a wire manufacturing industry. 10
8. The Cost and Life period of some component of a solar thermal plant is given below : 10

Item	Cost (₹/kW)	Life Period Years
Heat Energy Collectors	25,000	20
Boiler and Steam Turbine	13,900	10
Electric Generator	5,500	10
Accessories, Tools	1,000	5

If the interest rate is 10% per annum and maintenance cost is 1% of total capital cost per year, calculate Life cycle cost per kW.

9. What are the objectives of the integrated rural energy plan ? How could they be achieved ? 10
10. Write short notes on **any two** of the following : 2x5=10
- (a) Tuning of a boiler
 - (b) Energy Conservation in Transport Sector
 - (c) SANKEY diagram
 - (d) Animal Power

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