

SUBJECT CODE NO:- P-365
FACULTY OF ENGINEERING AND TECHNOLOGY
T.E.(EEP/EE/EEE) Examination May/June 2017
Energy Conservation & Audit
(Revised)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i. Q. No. 1 & 6 are compulsory.
 - ii. Attempt any other two questions each from SECTION –A & SECTION – B.
 - iii. Assume suitable data. If required.

Section A

- Q.1 Attempt any five. 10
- a) What are the different greenhouse gases? List out it.
 - b) Define “Energy – Audit” as per the energy conservation Act – 2001.
 - c) What is 2nd law of thermodynamics?
 - d) What is meant by evaporation ratio in case of steam boiler?
 - e) Define ‘ton’ of refrigeration.
 - f) What is meant by Global – warming potential?
 - g) Enlist any four instruments which are used for measurement with its application.
 - h) What is difference between direct & indirect method of boiler efficiency? Write any two points.
- Q.2
- a) What are the duties and responsibilities of energy auditor as per energy conservation Act – 2001. 07
 - b) Explain various steps involved in carrying out energy – audit with one example. 08
- Q.3
- a) Explain in detail the steps to calculate boiler efficiency by indirect method. 10
 - b) List out 5 energy conservation opportunities in boiler – plant of a thermal power station. 05
- Q.4
- a) What is need of co – generation? Explain its principles. And briefly explain the types of steam turbine cogeneration. 08
 - b) Explain “Affinity laws” applicable to pumping systems, and list the energy conservation opportunities in pumping system in an industry. 07
- Q.5 Write short notes on any three 15
- a) CDM and its objectives.
 - b) Role of Renewable energy sources in energy management of a nation.
 - c) Energy audit of heating, ventilation and air – conditioning system
 - d) BEE

Section B

- Q.6 Attempt any five 10
- a) Define – room index.
 - b) Define NPV with its standard formula.
 - c) What is IRR?
 - d) What is DSM?

- e) What is meant by TOD – tariff?
- f) Define power factor? Write the specification for P. E. improvement capacitors.
- g) What is PI?
- h) Calculate the fixed – energy consumption for a rolling mill consuming 3, 00,000 units electricity to produce 500MT product per month and having specific energy consumption of 500K.

- Q.7 a) Explain in detail the importance of power factor in energy conservation program. 08
 b) Explain IRR with advantages & limitations. 07

- Q.8 a) A proposed energy improvement project requires an initial investment of Rs. 5,00,000, & 07
 generates cash flows as

Year	Savings
1	1,20,000
2	1,15,500
3	1,30,000
4	1,16,500
5	1,17,250
6	2,00,000

Calculate the NPV of the proposal at the discount rate of 11%.

- b) Which points we want to consider to make motors more energy efficient? 08

- Q.9 Explain in detail the produce carry – out the energy audit of a typical steel plant. 15

- Q.10 Write short notes on any three 15

- a) Electronic Ballasts
- b) Energy conservation opportunities in thermal power plant.
- c) Net present value.
- d) E. A. 2003 and energy sector reforms.