Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree 7th semester (S,FE) Exam April 2025 (2019 Scheme)

Course Code: EET455

Course Name: ENERGY MANAGEMENT

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks. Marks

1	**Define Energy Audit.**	(3)
2	**What is ECBC? State its salient features.**	(3)
3	**List down any three peak demand control methodologies.**	(3)
4	**Tabulate the efficiency improvement methods adopted in EEM.**	(3)
5	**Discuss any two opportunities for energy savings in steam distribution.**	(3)
6	**Explain the significance of feed water treatment in boilers.**	(3)
7	**Define Coefficient of Performance.**	(3)
8	**What are the salient features of a cogeneration plant?**	(3)
9	**Explain the concept of Time value of money.**	(3)
10	**What are the advantages and limitations of Return on Investment method?**	(3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

11	a)	**With the help of case studies, explain any four energy management principles.**	(8)

b) **List and explain any four energy auditing instruments.** (6)

OR

12 a) **Discuss the various steps involved in detailed energy auditing.** (8)

b) **Explain the salient features of Building Management System.** (6)

Module II

13 a) **With the help of case studies, explain any four methods to reduce energy consumption in motors.** (8)

b) **Compare the efficacy of different light sources.** (6)

OR

14 a) **During an energy audit following data were obtained on a 3 phase induction motor:** (10)

Rated values: 37 kW,415V, 66 A,0.88 pf

Operating values: 410 V, 49A, 0.76 pf

Note: Motor efficiency in this particular case does not change between 50 – 100 % loading. It is proposed to replace the existing motor by a 30 kW energy efficient motor with 92% efficiency.

a) Determine the rated efficiency and the loading of the existing motor.

b) Calculate the loading with energy efficient motor.

b) **Briefly explain the different types of industrial loads.** (4)

Module III

15 a) **Discuss the various energy saving opportunities in furnaces.** (8)

b) **Explain the working of a steam trap with an example.** (6)

OR

16 a) **Discuss the different energy conservation opportunities in boilers.** (10)

b) **Explain boiler blow down** (4)

Module IV

17 a) **Enlist the factors affecting the performance of HVAC system.** (6)

b) **Discuss the various energy saving opportunities in heating, ventilation and air conditioning system** (8)

OR

18 a) **Explain briefly the different types of cogeneration plants.** (6)

b) **Discuss the operation of any two waste heat recovery devices.** (8)

Module V

19 a) **Calculate the internal rate of return for an economizer that will cost Rs.500,000, will last 10 years, and will result in fuel savings of Rs.150,000 each year.** (8)

b) **Explain life cycle costing approach for evaluation of proposals.** (6)

OR

20 a) **Discuss the concept of cash flow diagram** (6)

b) **How will you assess the financial feasibility of a project using net present value method?** (8)

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