Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S8 (S) Examination September 2025 (2019 Scheme)

Course Code: EET424

Course Name: ENERGY MANAGEMENT

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

PART A

Answer all questions, each carries 3 marks. Marks

1		What is the importance of energy management in our daily life?	(3)
2		What is the duty of an Energy Manager?	(3)
3		Define the term cascade efficiency. How is the cascade efficiency of power transmission and distribution system found out?	(3)
4		Compare any three parameters of incandescent, fluorescent, and LED lighting systems.	(3)
5		Discuss the benefits of power factor improvement.	(3)
6		Explain the terms: (a) peak clipping, (b) peak shifting (c) valley filling.	(3)
7		Explain the working of waste heat recovery system.	(3)
8		What is the need for feed water treatment in a boiler system?	(3)
9		Mention the advantages and disadvantages of the net present value method.	(3)
10		What is meant by computer-aided energy management?	(3)

PART B

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

Module I

11	a)	What is energy auditing? Explain the different phases included in it.	(7)
	b)	Explain the working of any three instruments used for auditing purposes.	(7)

OR

12	a)	Brief on different phases of an energy management program.	(10)
	b)	Write a note on Building Management System (BMS).	(4)

Module II

13	a)	Write a note on design measures for increasing efficiency of a transformer.	(4)

b) Explain the different methods adopted to reduce energy consumption in the lighting system. (10)

OR

14 a) Mention different standards related to energy-efficient motors. (7)

b) Discuss the different opportunities for energy management in electric motors. (7)

Module III

15 a) Discuss the importance of peak demand control. Explain the different methods used for peak demand control. (7)

b) What is Demand Side Management (DSM)? Discuss the benefits of DSM. (7)

OR

16 a) What is meant by ancillary services? What are the different types of ancillary services in the electricity industry? Explain each one of them in detail. (10)

b) What is multi-utility power exchange model. Explain (4)

Module IV

17 a) Explain energy saving opportunities in an HVAC system? (7)

b) Define the term cogeneration. Explain how cogeneration is advantageous over conventional power plant. (7)

OR

18 a) Explain different energy saving opportunities in boiler system. (7)

b) Explain various energy conservation measures in HVAC systems (7)

Module V

19 a) What is payback method of financial analysis? Mention the advantages and disadvantages of the payback period method. (7)

b) Calculate the energy saving and payback period which can be achieved by replacing an 11 kW, existing motor with an EEM. The capital investment required for EEM is Rs. 40,000/-. The cost of energy/kWh is Rs. 5. The loading is 70% of the rated value for both motors. The efficiency of the existing motor is 81% and that of EEM is 84.7%. (7)

OR

20 a) What is Life Cycle Costing (LCC)? Explain the different stages in LCC process? (7)

b) Find the life cycle cost of a wind energy system. Consider an interest rate of 12% and 1% of total capital cost as maintenance cost per year. (7)

Item	Cost in Rs/kW	Life period in years
Windmill	20,000	15
Gearbox	4,000	5
Turbine & Generator	15,000	10

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