

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S7 (R,S) Examination November 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

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| 1 | Define energy management. What are the objectives of energy management? | (3) |
| 2 | Explain what do you mean by energy audit report. | (3) |
| 3 | Explain how energy efficient motors help in reducing energy consumption. | (3) |
| 4 | Write notes on types of industrial loads. | (3) |
| 5 | What is a boiler system? What are the major components of a boiler system? | (3) |
| 6 | What is meant by a steam trap? | (3) |
| 7 | Define coefficient of performance (COP) of an HVAC system. | (3) |
| 8 | Mention the different types and benefits of waste heat recovery system. | (3) |
| 9 | What do you mean by cash flow model? | (3) |
| 10 | Discuss simple payback period method for the financial evaluation of a project | (3) |

PART B

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

Module I

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| 11 | a) Explain the different phases of energy management planning. | (9) |
| | b) List down the general principles of energy management. | (5) |

OR

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| 12 | a) What are the different types of energy audit? Explain the steps involved in detailed energy audit. | (10) |
| | b) Write notes on building energy management system. | (4) |

Module II

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| 13 | a) Explain the energy management opportunities in lighting systems | (7) |
| | b) Explain the energy management opportunities in motors. | (7) |

OR

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| 14 | a) Discuss the various energy management opportunities in electrolytic process. | (7) |
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- b) Enumerate the peak demand control methodologies used in energy management planning. (7)

Module III

- 15 a) What is meant by boiler blow down? Explain the types of blow down processes in boiler system. (6)
b) Explain various energy conservation opportunities in a boiler system. (8)

OR

- 16 a) Enumerate various energy saving opportunities in steam distribution system. (7)
b) Explain general fuel economy measures in furnaces. (7)

Module IV

- 17 a) Explain any five energy saving opportunities in heating, ventilating and air conditioning systems. (7)
b) Explain the working of a vapour compression refrigeration system. (7)

OR

- 18 a) Explain, with figure, the working of a heat wheel waste heat recovery system (8)
b) Explain computer aided energy management. (6)

Module V

- 19 a) Explain and compare internal rate of return method with present value method for the selection of energy projects. (9)
b) Calculate the Simple payback period for a continuous Deodorizer that costs Rs.60 lakhs to purchase and install, Rs.1.5 lakhs per year on an average to operate and maintain and is expected to save Rs.20 lakhs by reducing steam consumption. (5)

OR

- 20 a) Explain the life cycle costing method of financial analysis. What are its advantages? (9)
b) Cost of a heat exchanger is Rs.1.00 lakhs. Calculate simple payback period considering annual saving potential of Rs.60,000/- and annual operating cost of Rs.15,000/- . (5)
