

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B.Tech Degree Supplementary Examination October 2022 (2015 Scheme)

**Course Code: EE474****Course Name: ENERGY MANAGEMENT AND AUDITING**

Max. Marks: 100

Duration: 3 Hours

PART A*Answer all questions, each carries 5 marks.*

Marks

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| 1 | Explain any five general principles of energy management. | (5) |
| 2 | What are the energy saving opportunities in electric heating? | (5) |
| 3 | Explain how temperature control can be done in furnaces. | (5) |
| 4 | Explain the different operating loops in HVAC system. | (5) |
| 5 | List down the benefits of cogeneration system over conventional systems. | (5) |
| 6 | Give the equipment required and their purpose to assess the operating efficiency of a motor. | (5) |
| 7 | What is meant by life cycle costing? List out its advantages. | (5) |
| 8 | What is meant by simple payback period? Discuss its disadvantages. | (5) |

PART B*Answer any two full questions, each carries 10 marks.*

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| 9 | What are the advantages of peak demand control? Explain any two peak demand control methodology. | (10) |
| 10 | a) Explain the different types of losses in case of an induction motor. | (2) |
| | b) With the help of case studies, explain any four energy management opportunities in electric motors. | (8) |
| 11 | a) Explain the different types of industrial loads. | (5) |
| | b) List down and explain the energy efficiency opportunities in case of lighting systems. | (5) |

PART C*Answer any two full questions, each carries 10 marks.*

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| 12 | Differentiate between condensate and flash steam recovery system. | (10) |
| 13 | a) Give any two energy conservation opportunities in boilers. | (5) |
| | b) Explain any two methods to reduce energy consumption in HVAC systems. | (5) |
| 14 | Explain any two commercial waste heat recovery system devices. | (10) |

PART D

Answer any two full questions, each carries 10 marks.

- 15 Elaborate upon the different phases of conducting detailed energy audit for an industry. Give an account of the steps involved. (10)
- 16 a) Justify the need for computer aided energy management in the present scenario (5)
b) Calculate the net present value over a period of 3 years for a project with an initial investment of Rs 50000/- and a fuel cost saving of Rs 30000/- in each year. The discount rate is 16%. (5)
- 17 a) Calculate the internal rate of return (IRR) for a device that costs 5lakhs which lasts for 10years and result in fuel saving of Rs 1.5 lakhs each year. (5)
b) List out the advantages and disadvantages of life cycle costing approach. (5)
