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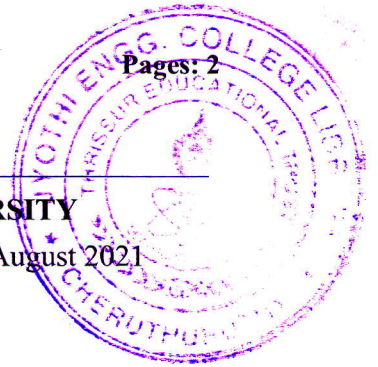
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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Eighth Semester B.Tech Degree Supplementary Examination August 2021

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

1	Explain how Time of Day (ToD) tariff helps in controlling peak demand at the consumer end?	(5)
2	Explain the energy management opportunities in electrolytic process?	(5)
3	Define boiler system and list down the opportunities to improve the operating efficiency of boiler system	(5)
4	What are the factors to be considered for feasible installation of waste heat recovery systems?	(5)
5	Explain the principle of cogeneration system and list down the benefits of cogeneration system over conventional systems	(5)
6	Define energy audit. List down the equipments required and their purpose to assess the operating efficiency of water pump.	(5)
7	What is meant by life cycle costing? List down the factors to be considered for assessing the life cycle cost of an electric motor.	(5)
8	Explain in brief the time value of money.	(5)

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

9	a)	What are the objectives of peak demand control methodologies? Explain any two peak demand control methodology.	(5)
	b)	Define energy management. Considering yourself as part of top management of a company, list down the steps to implement a proper energy management strategy in your company.	(5)
10	a)	Explain the different types of losses in case of an induction motor.	(5)
	b)	With the characteristic graph explain constant torque and constant power loads with examples.	(5)
11	a)	A 3 phase 45kW, delta connected motor with rated efficiency of 86% is driving	(5)

a centrifugal pump. Motor operating parameters are 410V, 27A at 0.67 power factor. Calculate the percentage loading of the motor. List down and explain any two methods to improve the efficiency of the system.

b) A newly built convention hall is to be provided with an energy efficient lighting system. Explain all possible methods to ensure optimal energy consumption by the lighting system. (5)

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

12 a) Analyze energy conservation opportunities in boiler. (5)

b) Write short note on functions of steam traps. Also explain the factors to be considered during installation of steam traps. (5)

13 a) Explain different stages of Refrigeration cycle with figure. (5)

b) What are the direct and indirect benefits of waste heat recovery systems? (5)

14 Explain with figure any two types of waste heat recovery devices. (10)

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

15 Explain the need of carrying out energy audit and the steps involved in detailed energy audit. (10)

16 a) List down and mention the purposes of any five energy auditing instruments. (5)

b) What are the advantages and disadvantages of simple payback method used for financial analysis of projects? (5)

17 The cash flow of two different energy conservation projects A and B is shown below. Evaluate the financial merits of two projects and help the management to invest in project A or project B. The annual discount rate of both the project is 8%. (10)

	Project A		Project B	
Capital Cost	Rs. 26000		Rs. 27000	
Year	Expenses	Savings	Expenses	Savings
1		6000		5500
2		6000		5500
3		6000		5500
4		6000	5000	7000
5	3000	7000		7000
6		7000		7000
7		7000		7000
8		7000		7000

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