



H1087

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Scheme for Valuation/Answer Key

Scheme of evaluation (marks in brackets) and answers of problems/key

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019

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 Any five principles – 1 mark each	(5)
2 Five points – 1 mark each	(5)
3 Boiler – 2, Components - 3	(5)
4 Capacity – 2, CoP with equation- 3	(5)
5 Energy Audit – 2, Three differences - 3	(5)
6 Cogeneration – 2, Advantages – 3	(5)
7 LCC- 2, Factors - 3	(5)
8 NPV/IRR -2, Explanation - 3	(5)

PART B

Answer any two full questions, each carries 10 marks.

- | | |
|---|------|
| 9 Definition – 2, Detailed Steps - 8 | (10) |
| 10 a) Any five methodologies with explanation – 1 mark each | (5) |
| b) Losses -3, Opportunities -2 | (5) |
| 11 a) Rated – 37kW,415V,72A,0.88pf
Operating – 410V,50A,0.73pf
Rated input power = 45.54kW
Rated efficiency of motor = Rated output/Rated input = 81.24%
Actual power drawn during operation = $\sqrt{3} \times 410 \times 50 \times .73 = 25.92\text{kW}$
Loading of motor = Actual power drawn / Rated input power drawn
= 56.91% - 3 marks | (10) |
| b) Output power of motor = Efficiency X Input power = 21.05kW

(Motor efficiency to remain constant between 52- 100%)
Eff3 motor rating = 30kW, 90% efficiency
Actual output power required = 21.05kW
Loading of eff3 motor = Actual output power / Rated output power = 70.16%
- 3 marks | |
| c) kW saved = $(21.05/.8124) - (21.05/.90)$
= 2.52kW - 4 marks | |



PART C

Answer any two full questions, each carries 10 marks.

- 12 Definition – 2, Blow down process (min 2 types) - 8 (10)
- 13 a) Five points – 1 mark each (5)
b) Figure – 2, Components - 3 (5)
- 14 Advantages – 2, Any two devices – 4 each (10)

PART D

Answer any two full questions, each carries 10 marks.

- 15 Steps with proper explanation – 10 marks (to be distributed uniformly) (10)
- 16 a) Any five instruments – 4, Parameters – 1 mark (5)
b) SPP- 2, NPV-3 (mark distribution to be changed accordingly) (5)
- 17 NPV – Rs. 486 (5 marks). IRR – Between 10% & 11% (5 marks) Proper weightage has to be given to the steps (10)

