

Code: 20EE4701B

IV B.Tech - I Semester – Regular Examinations - DECEMBER 2023

**ENERGY CONSERVATION AND AUDIT
(ELECTRICAL & ELECTRONICS ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Explain What are the challenges and barriers to a more widespread adoption of renewable energy sources, and how can they be overcome?	L3	CO2	7 M
	b)	How does energy production and consumption impact the environment, particularly in terms of greenhouse gas emissions and air quality?	L2	CO2	7 M
OR					
2	a)	Explain in detail the various Energy conservation schemes.	L3	CO2	7 M
	b)	What is the significance of reducing energy waste in homes and businesses for energy security?	L2	CO1	7 M

UNIT-II					
3	a)	What do you understand by matching energy use to requirements? Give examples.	L2	CO1	7 M
	b)	Explain the following (i) Production Factor (ii) Reference Year equivalent energy Use.	L4	CO3	7 M
OR					
4	a)	Explain the following (i) Ultrasonic Flow Meter (ii) Psychrometer.	L4	CO3	7 M
	b)	Explain areas that need to be focused during pre-audit phase.	L4	CO3	7 M
UNIT-III					
5	a)	List various advantages of PF improvement, Cost benefits of PF improvement by capacitor addition.	L3	CO4	7 M
	b)	Explain how fluctuations in plant voltage can be overcome.	L4	CO4	7 M
OR					
6	a)	How does efficiency loss occur in a rewind motor?	L2	CO4	7 M
	b)	A 50 kW induction motor with 86 % present full load efficiency is being considered for replacement by a 89 % efficiency motor. What will be the savings in energy if the motor works for 6000 hours per year and cost of energy is Rs. 4.50 per kWh?	L3	CO4	7 M

UNIT-IV					
7	a)	What are the methods of capacity control in reciprocating air compressors?	L2	CO4	7 M
	b)	Explain the key performance metrics used to evaluate the efficiency and effectiveness of compressors?	L3	CO4	7 M
OR					
8	a)	Mention energy saving options in the fan.	L3	CO4	7 M
	b)	What are affinity laws as applicable to centrifugal fans?	L2	CO4	7 M
UNIT-V					
9	a)	What are the precautions to be taken in the case of energy efficient motor application?	L2	CO5	7 M
	b)	Explain how maximum demand control works.	L3	CO1	7 M
OR					
10	a)	Explain the primary applications and industries where VSDs are commonly used to improve energy efficiency.	L3	CO5	7 M
	b)	List and explain energy saving measures in lighting system.	L4	CO5	7 M