

Code: 20EE4501A

**III B.Tech - I Semester – Regular / Supplementary Examinations
NOVEMBER 2023**

**UTILIZATION OF ELECTRICAL ENERGY
(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)	Discuss the temperature rise in motor. Derive the equation for Heating of Motor.	L3	CO4	7 M
	b)	Explain the starting and running characteristics of DC motors.	L3	CO2	7 M
OR					
2		Illustrate the different types of electric drives in detail.	L3	CO2	14 M
UNIT-II					
3	a)	With neat sketch explain about dielectric heating.	L4	CO4	7 M
	b)	Explain electric arc welding with fundamentals.	L3	CO4	7 M
OR					

4	a)	Explain working principle of induction furnace.	L3	CO2	7 M
	b)	What is meant by electric welding? Discuss the advantages and disadvantages of electric welding.	L2	CO1	7 M
UNIT-III					
5	a)	State and prove the laws of illumination.	L3	CO2	7 M
	b)	With a neat diagram, explain the construction and working of sodium vapour lamp.	L4	CO4	7 M
OR					
6		Illustrate the different types of lightning schemes.	L3	CO2	14 M
UNIT-IV					
7	a)	Explain about electric traction and state the advantages of electric traction over other non-electrical systems.	L2	CO1	7 M
	b)	Analyze the trapezoidal and quadrilateral speed time curves.	L4	CO5	7 M
OR					
8		Summarize the special features of traction motors.	L3	CO3	14 M
UNIT-V					
9	a)	Analyze the mechanics of train movement with neat sketch.	L4	CO5	7 M

	b)	Derive an expression for specific energy consumption output on level track using a simplified speed time curve.	L4	CO5	7 M
OR					
10	a)	Employ mathematical expression for the tractive effort developed by train unit.	L4	CO5	7 M
	b)	Illustrate the different types of current collectors in OHE system.	L3	CO3	7 M