DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

IV B.Tech, I Semester, Academic Year: 2026-27

Course Name : UTILIZATION OF ELECTRIC ENERGY
L – T – P : 3– 0– 0
Course Instructor : Dr.C.Sasikala

Prerequisites: Electrical Machines-I and Electrical Machines-II

Course Objectives:

- To understand the fundamentals of illumination and good lighting practices
- To understand the methods of electric heating and welding.
- To understand the concepts of electric drives and their application to electrical traction systems.

Course Outcomes:

- Explain basic principle of electric heating and welding.
- Prepare the lighting requirements for flood lighting, house hold and industrial needs.
- Calculate heat developed in induction furnace.
- Sketch the speed time curves for traction.
- Develop the systems of train lighting methods.

UNIT WISE QUESTION BANK

Unit-1

S.No	Questions	BT	CO	PO
	Part -A (Short Answer Questions)			
1	What are the advantages of electric heating over convent heating methods?	L1	CO1	1
2	Define electrical heating and list its applications.	L1	CO1	1
3	What are the different methods of electric heating?	L1	CO1	1
4	Explain the principle of resistance heating.	L1	CO1	1
5	Differentiate between direct resistance heating and indire resistance heating.	L1	CO1	1
6	What is induction heating? State its working principle.	L1	CO1	2
7	List the advantages of induction heating.	L1	CO1	2
8	What is dielectric heating and why is high frequency use	L2	CO1	2
9	Mention any four applications of dielectric heating.	L2	CO1	2
10	Compare resistance heating and induction heating.	L1	CO1	2

S.No	Questions	BT	CO	PO
	Part -B (Long Answer Questions)	L1	CO1	1
1	Explain the advantages of electrical heating over o forms of heating. Discuss its industrial application	L1	CO1	1
2	Describe various methods of electrical heating wit sketches and suitable examples.	L1	CO1	1
3	Compare electric heating with coal-fired and oil-fired heating systems.	L1	CO1	2
4	Explain the principle, construction, and operation resistance heating with suitable diagrams.	L1	CO1	2
5	Discuss the different types of resistance heating. Explain direct and indirect resistance heating in detail.	L1	CO1	2
6	Derive the expression for heat produced in a resist heating element and discuss the factors affecting it	L2	CO1	3
7	Explain the principle of induction heating with a n	L2	CO1	2

	diagram and discuss its advantages and applicatior			
8	Describe the construction and working of a core-type induction furnace.	L2	CO1	2
9	Explain the principle of dielectric heating with a neat circuit diagram.	L2	CO1	2
10	Derive the expression for power absorbed in dielec heating.	L3	CO1	3