

Discipline :- Electrical Engineering		Semester 5th	Name of the teaching faculty Mrs. S. Satapathy
Subject :- utilization of Electrical Energy and Traction.		No. of day per week class all 4	Semester from date :- 01.10.2021 to date :- 08.09.2022 No of weeks :- 15
Month	Weeks	class day	Theory Topics
Oct	1st	1st	Definition and Basic Principal of Electro Deposition
		2nd	Important terms regarding electrolysis.
		3rd	Faraday's law of Electrolysis.
		4th	Faraday's law of Electrolysis.
	2nd	1st	Definitions of current efficiency & Energy efficiency
		2nd	Principal of Electro Deposition
		3rd	factors affecting the amount of Electro Deposition.
		4th	factors governing the electro deposition
			State simple example of extraction of metals.

Months	Weeks	Class day	Theory Topics
			Application of Electrolysis
			Advantages of electrical heating. Mode of heat transfer and Stehens law.
	2nd		Principle of Resistance heating Direct resistance and Indirect resistance heating.
	3rd		Discuss working principle of direct arc furnace and indirect arc furnace.
	4th		Principle of induction heating
	5th		working principle of direct core type, ventral core type and indirect core type Induction furnace.
Nov	1st	1st	Principle of coreless Induction furnace and skin effect.
	2nd		Principle of dielectric heating and its application.
	3rd		Principle of microwave heating and its application.

Months	Weeks	Class day	Theory Topics
		4th	Principle of microwave heating and its application
	2nd	1st	Explain Principle of arc welding.
		2nd	Discuss DC and AC Arc phenomena.
		3rd	DC & AC arc welding plants of Single and multi-operation type.
		4th	Types of arc welding.
	5th	1st	Method of choice of electric drive.
		2nd	Explain starting and running Characteristics of DC and AC motor.
		3rd	State application of DC motor.
		4th	State application of 3-phase induction motor.
			State application of 3-phase synchronous motors.

Months	Weeks	Class day	Theory Topics
DEC.	1st	1st	State application of single phase Induction and Series motor.
		2nd	State application of universal motor and repulsion motor.
		3rd	Explain system of traction.
		4th	System of Track electrification
	2nd	1st	Running characteristics of DC and AC traction motor
		2nd	Explain control Trapped field control motor.
		3rd	Explain Rheostatic control motor
		4th	Explain series parallel control.
	3rd	1st	Explain multi unit control motor.
		2nd	Explain Multi unit control motor.
		3rd	Explain Metadyne control motor.
		4th	Explain Metadyne control motor.

Month	Weeks	Class day	Theory Topics
	3rd	2nd	Explain polar curves.
		4th	Describe light distribution and control, explain definition like maintenance factor and depreciation factors.
		1st	Design simple lighting schemes and depreciation factor
		2nd	Construction feature and working of filament lamps. effect of variation of voltage on working of filament lamp.
		3rd	Effect of variation of voltage on working of filament lamps.
		1st	Explain Discharge lamps.
	JAN.	2nd	State basic idea about excitation in gas discharge lamps.
		3rd	State constructional features.
		4th	State operation of fluorescent lamp (PL and PLL lamps)
		2nd	1st

Months	Weeks	class day	Theory	Topics
		2nd	Sodium Vapor	Lamps
		3rd	High pressure	Mercury vapor lamps
	3rd	1st	New light	Lamps.
		2nd	High pressure	Mercury vapor lamps
	2nd 3rd		High lumin output and low consumption	Fluorescent lamps.
		4th	State group	and individual.
	4th	1st	Method of choice	of electric drive
			Explain starting	and running characteristics of DC and AC Motor
		2nd	state application and running	character of DC and AC motor.
			state application of	3-phase induction motor.
			state application of	3-phase synchronous motors.

Months	Weeks	class day	Theory	Topics
		2nd	Explain	Regenerative Braking
			Explain	Regenerative Braking
			Explain	Braking with phase series motor.
		4th	Explain	Braking with phase series motor.
			Explain	Braking with Magnetic Braking
			Explain	Braking with Magnetic Braking.