lesson Plan

Name of Faculty : Varunendra Kumar singh
Discipline : I&C
Semester : 5th sem
Subject : INDUSTRIAL ELECTRONICS AND CONTROL OF DRIVES
Lesson Plan Duration : 15 weeks(from Aug to Dec 2024)
Work Load (lecture/practical)per week (in hours) : Lectures- 03, practical- 04

Week	Theory		Practical	
	Lecture Day	Topic(including assignment/test)	Practical week	Practical Topic
1	1(unit 1)	Construction, Working principle of SCR	1	To plot VI characteristic of an SCR.
	2	Two transistor analogy of SCR, V-I characteristics of SCR.		
	3	SCR specifications and ratings.		
2	4	Different methods of SCR triggering.	2	To plot VI characteristics of TRIAC
	5	Different commutation circuits for SCR.		
	6	Series and parallel operation of SCR.		
3	7	Construction and working principle of DIAC, TRIAC and their V-I characteristics	3	To plot VI characteristics of UJT.
	8	Construction, working principle of UJT, V-I characteristics of UJT. UJT as relaxation oscillator		
	9	Brief introduction to Gate Turn off thyristor (GTO), Programmable Uni-junction Transistor (PUT), MOSFET		
4	10	Basic idea about the selection of Heat sink for thyristors	4	To plot VI characteristics of DIAC.
	11	Applications such as light intensity control, speed control of universal motors		
	12	Fan regulator, battery charger.		
5	13(unit 2)	Single phase half wave controlled rectifier with load (R, R-L)	5	Study of UJT relaxation oscillator. And observe I/P and O/P wave forms
	14	Single phase half controlled full wave rectifierwith load(R, R-L)		
	15	First sessional test		

6	16	Fully controlled full wave bridge rectifier.	6	Observation of wave shape of voltage at relevant point of single-phase half wave controlled rectifier and effect of change of firing angle
	17	Single phase full wave centre tap rectifier.		
	18(unit 3)	Principle of operation of basic inverter circuits, concepts of duty cycle, series and parallel. Inverters & their applications		
7	19	Choppers: Introduction, types of choppers (Class A, Class B, Class C and Class D).	7	Observation of wave shapes of voltage at relevant point of single phase full wave controlled rectifier and effect of change of firing angle.
	20	Step up and step down choppers		
	21	Assignment 1		
8	22	Dual Converters and cyclo converters: Introduction, types and basic working principle of dual converters	8	Observation of wave shapes and measurement of voltage at relevant points in TRIAC based AC phase control circuit
	23	Cyclo converters and their applications.		
	24	2nd sessional test revision		
9	25	2nd sessional test	9	VIVA - VOICE
	26(unit 4)	DC drive control, Half wave drives		
	27	Full wave drives		
10	28	Assignment 2	10	All files are checked
	29	All notebooks are checked		
	30	Chopper drives (Speed control of DC motor using choppers)		
11	31	AC drive control, Phase control	11	Varying lamp intensity and AC fan speed control.
	32	Constant V/F operation		
	33	Cycloconverter/Inverter CKT's		
12	34	Assignment 3	12	Installation of UPS system and routine maintenance of batteries.
	35	AC/DC drive control application in automobile		
	36(unit 5)	ON line UPS		

13	37	OFF line UPS	13	Speed control of motor using SCRs
	38	Specifications of UPS		
	39	Power Converter for Electrical Vehicle charging		
14	40	Conceptof SMPS	14	VIVA-VOICE
	41	Power Converter for Renewable Energy: solar and wind		
	42	3rd sessional test revision		
15	43	3rd sessional test	15	All files are checked
	44	Revision		
	45	Revision		