

## LESSON PLAN FOR ACADEMIC SESSION 2023-24(WINTER-2023)

Discipline: Electrical Engineering		Semester:5th	Name of Teaching faculty:Pratima Bhoi	
Subject:Power Electronics & PLC		Semester From Date:01.08.2023 to 30.11.2023		
SI NO.	DATE	CHAPTER	THEORY TOPIC NAME	NO. OF PERIODS
1	1.08.23	<b>UNDERSTAND THE CONSTRUCTION AND WORKING OF POWER ELECTRONIC DEVICES CHAPTER-01</b>	Introduction to Power Electronics	1
2	3.08.23		1.1 Construction , Operation , V-I Characteristics & application of Power diode & DIAC	1
3	4.08.23		1.1 Construction , Operation , V-I C haracteristics & application of SCR	1
4	7.08.23		1.1 Construction , Operation , V-I Characteristics & application of TRIAC	1
5	8.08.23		1.1 Construction , Operation , V-I Characteristics & application of Power MOSFET.	1
6	10.08.23		Continue.....	1
7	11.08.23		1.1 Construction , Operation , V-I C haracteristics & application of GTO & IGBT.	1
8	14.08.23		1.2 Two Transistor analogy of SCR.	1
9	17.08.23		1.3 Gate characteristic of SCR.	1
10	18.08.23		1.4 Switching characteristics of SCR during Turn on and turn off Time.	1
11	21.08.23		1.5 Turn on method of SCR.	1
12	22.08.23		1.6 Turn off methodes of SCR ( Line commutation and forced commutation)	1
13	24.08.23		1.6.1 Load Commutation	1
14	25.08.23		1.6.2 Resonance pulse Commutation	1
15	28.08.23		1.7 voltage and current rating of SCR	1
16	29.08.23		1.8 Protection of SCR 1.8.1 Over volatge protection 1.8.2 over current protection 1.8.3 Gate protection	1
17	31.08.23		1.9 Firing circuit 1.9.1 General layout diagram of firing circuit 1.9.2 R firing circuits	1
18	1.09.23		1.9.3 R-C firing circuit	1
19	4.09.23		1.9.4 UJT Pulse trigger circuit	1
20	5.09.23		1.9.5 Synchronous triggering (Ramp Triggering) 1.10 Design of Snubber Circuits	1
21	7.09.23		Doubt Clearing .....	1
22	08.09.23		2.1 Controlled rectifier Technioques( Phase Angle , Extinction Angle control) , single quadrant semi converter, two quadrant full converter and dual converter.	1
23	11.09.23		2.2 Working of Single-phase half wave controlled converter with Resistive (R) loads.	1

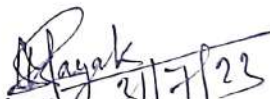
	12.09.23		2.2 Working OF Single-phase half wave controlled converter with R-L load	1		
23	25	14.09.23	2.3 Understand need of Freewheeling diode. 2.4 working of single phase fully controlled converter with resistive load.	1		
3	26	15.09.23	Continue.....	1		
	27	18.09.23	<b>UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS AND CHOPPERS CHAPTER-02</b>	2.4 Working of single phase fully controlled converter with Resistive load.	1	
	28	19.09.23		2.5 Working of three -phase half wave controlled converter with resistive load	1	
	29	20.09.23		Continue.....	1	
	30	21.09.23		2.6 Working of three phase fully controlled converter with resistive load	1	
	31	22.09.23		2.7 Working of single phase AC regulator 2.8 Working principle of step up chopper	1	
	32	25.09.23		2.8 Working principle of step down chopper	1	
	33	26.09.23		2.9 control mode of chopper	1	
	34	28.09.23		2.10 Operation of chopper in all four quadrants	1	
	35	03.10.23		Doubt Clearing .....	1	
	36	05.10.23		<b>UNDERSTAND THE INVERTERS AND CYCLO- CONVERTERS CHAPTER-03</b>	3.1 Classify inverters.	1
	37	06.10.23			3.2 Explain the working of series inverter.	1
	38	9.10.23			3.3 Explain the working of Parallel inverter.	1
	39	10.10.23			3.4 Explain the Working of single-phase bridge inverter.	1
	40	12.10.23			3.5 Explain the basic principle of Cyclo-converter.	1
	41	13.10.23	3.6 Explain the Working of single -phase step-up Cyclo-Converter		1	
	42	16.10.23	3.6 Explain the Working of single -phase step-down Cyclo-converter. 3.7 Application of Cyclo-Converter .		1	
	43	17.10.23	Doubt Clearing .....		1	
	44	19.10.23	<b>UNDERSTAND THE APPLICATION OF POWER ELECTRONIC CIRCUIT CHAPTER-04</b>	4.1 List application of power electronic circuits. 4.2 List the factors affecting the speed of D.C Motors.	1	
	45	20.10.23		4.3 Speed control for DC shunt motor using converter. 4.4 Speed control for DC shunt motor using chopper.	1	
	46	2.11.23		4.5 List the factors affecting speed of the AC Motors. 4.6 Speed control of induction motor by using AC voltage regulator.	1	
	47	3.11.23		4.7 Speed control of induction motor by using converter and inverter (V/F control).	1	
	48	6.11.23		4.8 Working of UPS with block diagram.	1	
	49	7.11.23		4.9 Battery charger circuit using SCR with the help of a diagram	1	
			4.10 Basic Switched mode power supply (SMPS). Explain its working & application	1		

	9.11.23		Doubt Clearing .....	1
51	10.11.23	<b>PLC AND ITS APPLICATION CHAPTER-05</b>	5.1 Introduction of programmable Logic controller (PLC)	1
52	13.11.23		5.2 Advantages of PLC 5.3 different parts of PLC by drawing the Block diagram and purpose of each parts of PLC	1
53	14.11.23		5.4 Application of PLC 5.5 Ladder diagram	1
54	16.11.23		5.6 Description of contacts and coils in the following states i) Normally Open ii) Normally closed iii) Energized output iv) latched output v) branching	1
55	17.11.23		5.7 Ladder diagram for i) AND Gate ii) OR Gate and iii) NOT Gate 5.8 Ladder diagram for combination circuit using NAND , NOR AND , OR and NOT	1
56	20.11.23		5.9 Timers i) T ON II) T OFF and iii) Retentive timer 5.10 counter-CTU, CTD	1
57	21.11.23		5.11 Ladder diagrams using Timers and counter 5.12 PLC instruction SET	1
58	23.11.23		5.13 Ladder diagram for following i) DOL starter and STAR-DELTA starter ii) Stair case lighting iii) Traffic light control iv) Temperature	1
59	24.11.23		5.14 Special control system- Basics DCS & SCADA systems 5.15 computers control-Data Acquisition, Direct Digital Control System	1
60	27.11.23			Doubt Clearing .....
61	28.11.23		Doubt Clearing .....	1
62	30.11.23	<b>LAST YEAR QUESTION DISCUSSION</b>	Previous year question discussion	1
<b>TOTAL CLASSS</b>				<b>62</b>

  
Prepared by  
Pratima Bhoi  
27.10.23

Sr. Lect (Electrical)  
G.P. Sonepur

  
Head of the Department  
Electrical Engg.  
G.P.Sonepur

  
Academic co-ordinator  
G.P.Sonepur