DISCIPLINE – ELECTRICAL ENGG	SEMESTER 5TH	NAME OF THE TEACHING FACULTY- ASIT KUMAR SAHOO, PTGF(ELECT.)	
SUB-PE & PLC	No Of Days Per Week Class Alloted-4	SEMESTER FROM 15.09.2022 TO 22.12.2022 NO OF WEEK – 13 WEEKS	
WEEK	CLASS DAY	THEORY	STATUS
1ST WEEK	1ST day 2nd day &3rd day 4th day	**UNDERSTAND CONSTRUCTION AND WORKING OF POWER ELECTRONICS DEVICES** 1.1 Construction, V-I characteristics & application of power diode, scr, diac, triac,power mosfet, gto &igbt 1.2 Two transistor analogy of SCR. 1.3 Gate characteristics of SCR 1.4 Switching characteristics of SCR during turn on and turn off 1.5 Turn on method of SCR.	
2nd WEEK	1ST day 2nd day &3rd day 4th day	1.6 Turn off method of SCR(commutation technique) 1.7 Voltage and current rating of SCR. 1.8 Protection of SCR 1.9 Firing circuits 1.10 Design of snubber circuits.	
3RD WEEK	1ST day 2nd day &3rd day 4th day	**UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS AND CHOPPER** 2.1 Controlled rectifiers techniques, single quadrant semi converter, two quadrant full converter and dual converter. 2.2 Working of single phase half wave controlled rectifier with R & R-L load. 2.3 Understand need of freewheeling diode.	
		2.4 Working of single phase fully controlled converter with R & R-L load	

4TH WEEK	1ST day 2nd day &3rd day 4th day(govt holiday)	2.5 Working of three-phase half wave controlled controlled converter with R load. 2.6 Working of three phase fully controlled converter with R load.	
5TH WEEK	1ST day 2nd day &3rd day 4th day	2.7 Working of single phase ac regulator. 2.8 Working principle of step-up and step-down chopper. 2.9 Control modes of chopper. 2.10 Operation of chopper in all 4 quadrants.	
6TH WEEK	1ST day 2nd day &3rd day 4th day	**UNDERSTAND THE INVERTERS AND CYCLO-CONVERTER** 3.1. Classify inverters. 3.2. Working of series inverters. 3.3. Working of parallel inverter. 3.4. Working of single phase bridge inverter.	
7TH WEEK	1ST day 2nd day &3rd day 4th day	3.5. Working of single phase bridge inverter 3.6. Working of single-phase step-up and step-down cyclo-converter 3.7. Application of cyclo-converter	
8TH WEEK	1ST day 2nd day &3rd day(govt holiday) 4th day	**UNDERSTAND APPLICATIONS OF POWER ELECTRONICS CIRCUITS** 4.1. List application of power electronics circuits. 4.2. List the factors affecting the speed of DC motor. 4.3. Speed control of DC shunt motor using converter.	
	1ST day(govt holiday) 2nd day	4.4. Speed control of dc shunt motor using chopper. 4.5. List of factors affecting speed of the AC motor. 4.6. Speed control of induction motor by using AC voltage regulator. 4.7. Speed control of induction motor by using AC voltage regulator (v/f control).	

9TH WEEK	&3rd day 4th day		
10TH WEEK	1ST day 2nd day &3rd day 4th day	4.8. Working of UPS with block diagram. 4.9. Battery charger circuit using SCR with help of a diagram. 4.10. Basic switched mode power supply (SMPS)-explain its working and applications.	
11TH WEEK	1ST day 2nd day &3rd day 4th day	**PLC AND ITS APPLICATION** 5.1. Introduction of programmable logic controller (PLC). 5.2. Advantages of PLC 5.3. Different part of PLC by drawing the block and purpose of each part of PLC. 5.4 Application of PLC.	

12TH WEEK	1ST day
	2nd day
	&3rd day
	4th day
		5.5. Ladder diagram
		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
		5.7. Ladder diagrams for AND gate OR gate and NOT gate.
		5.8. Ladder diagram for combination circuit using NAND, NOR, AND, OR & NOT	

13TH WEEK	1ST day(govt holiday) 2nd day &3rd day 4th day	5.9 Timers 5.10 Counters- CTU, CTD 5.11 Ladder diagram using Timer and counters 5.12. PLC instruction set 5.13. Ladder diagram of STAR-DELTA, Stair case lightening, traffic light controller, Temperature controller	