

DISCIPLINE		SEMESTER	NAME OF THE TEACHING FACULTY
ELECTRONICS & TELE-COMMUNICATION		5TH	MISS.SINDHUJA PANIGRAHI(GF)
SUBJECT:PE&PLC(TH-5)		NO. OF DAYS PER WEEK CLASS ALLOTTED : 04	SEMESTER FROM 01/07/2024 TO16/12/24
WEEKS	CLASS DAYS	NO. OF WEEKS : 15 NOS.	
THEORY TOPICS			
UNDERSTAND THE CONSTRUCTION & WORKING OF POWER ELECTRONICS DEVICES			
1ST WEEK	1ST	Introduction to Power Electronics & Construction, Operation, V-I characteristics & application of power diode	
	2ND	Construction, Operation, V-I characteristics & application of SCR	
	3RD	Construction, Operation, V-I characteristics & application of DIAC,TRIAC	
	4TH	Construction, Operation, V-I characteristics & application of Power MOSFET,GTO	
2ND WEEK	1ST	Construction, Operation, V-I characteristics & application of IGBT	
	2ND	Two transistor analogy of SCR, Gate characteristics of SCR	
	3RD	Switching characteristic of SCR during turn on of SCR	
	4TH	Switching characteristic of SCR during turn off of SCR	
3RD WEEK	1ST	Turn on methods of SCR,Turn off methods of SCR (Line commutation and Forced commutation)	
	2ND	Load Commutation,Resonant pulse commutation	
	3RD	Voltage and Current ratings of SCR	
	4TH	Protection of SCR( Over voltage protection, Over current protection,Gate protection)	
4TH WEEK	1ST	Firing Circuits,General layout diagram of firing circuit	
	2ND	R firing circuits	
	3RD	R-C firing circuit	
	4TH	UJT pulse trigger circuit	
5TH WEEK	1ST	Synchronous triggering (Ramp Triggering )	
	2ND	Design of Snubber Circuits	
		UNDERSTAND THE WORKING OF CONVERTERS,AC REGULATORS &CHOPPERS	
	3RD	Understand the working of Converters-Controlled rectifiers Techniques(Phase Angle, Extinction Angle control)	
6TH WEEK	4TH	Single quadrant semi converter, two quadrant full converter and dual Converter	
	1ST	Working of single-phase half wave controlled converter with Resistive loads	
	2ND	Working of single-phase half wave controlled converter with and R-L loads	
	3RD	Working of single-phase half wave controlled converter with and R-L loads & Understand need of freewheeling diode	
7TH WEEK	4TH	Working of single phase fully controlled converter with resistive and R- L loads	
	1ST	Working of three-phase half wave controlled converter with Resistive load	
	2ND	Working of three phase fully controlled converter with resistive load	
	3RD	Working of single phase AC regulator	
8TH WEEK	4TH	Working principle of step up & step down chopper	
	1ST	Control modes of chopper,Working principle of CLASS-A,CLASS-B Chopper	
	2ND	Working principle of CLASS-C & CLASS-D Chopper	
	3RD	Working principle of CLASS-E Chopper & Operation of chopper in all four quadrants.	
		UNDERSTAND THE INVERTERS AND CYCLO-CONVERTERS	
	4TH	Understand the basics of inverter,Classify inverters	



9TH WEEK	1ST	Explain the working of series inverter
	2ND	Explain the working of parallel inverter
	3RD	Explain the working of single-phase bridge inverter
	4TH	Explain the basic principle of Cyclo-converter
10TH WEEK	1ST	Explain the working of single-phase step up & step down Cyclo-converter
	2ND	Applications of Cyclo-converter
		UNDERSTAND APPLICATIONS OF POWER ELECTRONIC CIRCUITS
	3RD	Understand application of power electronics circuit
11TH WEEK	4TH	List applications of power electronic circuits
	1ST	List the factors affecting the speed of DC Motors
	2ND	Speed control for DC Shunt motor using converter
	3RD	Speed control for DC Shunt motor using chopper
12TH WEEK	4TH	List the factors affecting speed of the AC Motors
	1ST	Speed control of Induction Motor by using AC voltage regulator
	2ND	Speed control of induction motor by using converters and inverters (V/F control)
	3RD	Working of UPS with block diagram
13TH WEEK	4TH	Battery charger circuit using SCR with the help of a diagram
	1ST	Basic Switched mode power supply (SMPS) - explain its working & applications
		PLC AND ITS APPLICATIONS
	2ND	Introduction of Programmable Logic Controller(PLC),Advantages of PLC
14TH WEEK	3RD	Different parts of PLC by drawing the Block diagram and purpose of each part of PLC.
	4TH	Applications of PLC,Ladder diagram
	1ST	Contacts and coils in the following states)Normally open ii) Normally closed iii) Energized output iv)latched Output v) branching
	2ND	Ladder diagrams for i) AND gate ii) OR gate and iii) NOT gate & combination circuits using NAND,NOR
15TH WEEK	3RD	Timers-i)T ON ii) T OFF and iii)Retentive timers & Counters-CTU, CTD,Ladder diagrams using Timers and counters
	4TH	PLC Instruction set,Ladder diagrams for (i) DOL starter and STAR-DELTA starter (ii) Stair case lighting
	1ST	Ladder diagrams for (iii) Traffic light Control (iv) Temperature Controller
	2ND	Special control systems- Basics DCS & SCADA systems
	3RD	Computer Control-Data Acquisition
	4TH	Direct Digital Control System (Basics only)

10/07/24  
 (G.F, ELECT)

10/07/2024  
 HOD (ELECTRICAL)  
 GOVT. POLY.  
 GAJAPATI