


DISCIPLINE	SEMESTER	NAME OF THE TEACHING FACULTY	
ELECTRICAL	5TH	SRI DEEPAK KUMAR ROUL, LECTURER	
SUBJECT: PE & PLC (TH-5)		NO. OF DAYS PER WEEK CLASS ALLOTTED : 04	SEMESTER FROM 01/07/2024 TO 12/11/2024
			NO. OF WEEKS : 15 NOS.
WEEKS	CLASS DAYS	THEORY TOPICS	
1ST	✓ 1ST	Construction, Operation, V-I characteristics & application of power diode	
	✓ 2ND	Construction, Operation, V-I characteristics & application of SCR, DIAC	
	✓ 3RD	Construction, Operation, V-I characteristics & application of TRIAC, Power MOSFET	
	✓ 4TH	Construction, Operation, V-I characteristics & application of GTO & IGBT	
2ND	✓ 1ST	Study of Two transistor analogy of SCR and Gate characteristics of SCR	
	✓ 2ND	Study of Switching characteristic of SCR during turn on	
	✓ 3RD	Study of Switching characteristic of SCR during turn off.	
	✓ 4TH	Study of different Turn on methods of SCR.	
3RD	✓ 1ST	Resonant pulse commutation	
	✓ 2ND	Voltage and Current ratings of SCR.	
	✓ 3RD	Protection of SCR	
	✓ 4TH	2. Over current protection 3. Gate protection	
4TH	✓ 1ST	General layout diagram of firing circuit	
	✓ 2ND	2. R-C firing circuit	
	✓ 3RD	4. Synchronous triggering (Ramp Triggering)	
	✓ 4TH	Design of Snubber Circuits	
5TH	✓ 1ST	quadrant semi converter	
	✓ 2ND	two quadrant full converter and dual Converter	
	✓ 3RD	Working of single-phase half wave controlled converter with Resistive and R-L loads.	
	✓ 4TH	Working of three-phase half wave controlled converter with Resistive load	
6TH	✓ 1ST	Working of three phase fully controlled converter with resistive load.	
	✓ 2ND	Working of single phase AC regulator.	
	✓ 3RD	Working principle of step up & step down chopper.	
	✓ 4TH	Control modes of chopper - Operation of chopper in all four quadrants.	
7TH	✓ 1ST	Classify inverters. 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	
8TH	✓ 1ST	Explain the working of single-phase step up Cyclo-converter	
	✓ 2ND	Explain the working of single-phase step down Cyclo-converter	
	✓ 3RD	Applications of Cyclo-converter	
	✓ 4TH	List applications of power electronic circuits	
9TH	✓ 1ST	List the factors affecting the speed of DC Motors.	
	✓ 2ND	Speed control for DC Shunt motor using chopper	
	✓ 3RD	List the factors affecting speed of the AC Motors	
	✓ 4TH	Speed control of Induction Motor by using AC voltage regulator	
10TH	✓ 1ST	Speed control of induction motor by using converters and inverters (V/F control).	
	✓ 2ND	Working of UPS with block diagram	
	✓ 3RD	Battery charger circuit using SCR with the help of a diagram	
	✓ 4TH	Basic Switched mode power supply (SMPS) - explain its working & applications	
	✓ 1ST	Introduction of Programmable Logic Controller (PLC), Advantages of PLC	
	✓ 2ND	Different parts of PLC by drawing the Block diagram and purpose of each part of PLC.	
	✓ 3RD	Applications of PLC	

11TH	4TH	Ladder diagram
12TH	✓ 1ST	i) Normally open ii) Normally closed
	2ND	iii) Energized output iv) latched Output v) branching
	✓ 3RD	Ladder diagrams for i) AND gate ii) OR gate and iii) NOT gate
	✓ 4TH	Ladder diagrams for combination circuits using NAND, NOR, AND, OR and NOT
13TH	✓ 1ST	Timers-i) T ON ii) T OFF and iii) Retentive timer
	✓ 2ND	Counters-CTU, CTD
	✓ 3RD	Ladder diagrams using Timers
	✓ 4TH	Ladder diagrams using counters
14TH	1ST	PLC Instruction set
	2ND	(i) DOL starter and STAR-DELTA starter
	3RD	(ii) Stair case lighting (iii) Traffic light Control
	4TH	(iv) Temperature Controller
15TH	1ST	Special control systems- Basics DCS
	2ND	Special control systems-SCADA systems
	3RD	Computer Control-Data Acquisition, Direct Digital Control System (Basics only)
	4TH	Doubt clearing and previous year question discussion class


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