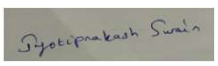
UTKAL INSTITUTE OF ENGINEERING & TECHNOLOGY

DISCIPLINE: Electronics & Telecommunication Engg.	SEMESTER: 5th Sem	NAME OF THE TEACHING FACULTY: Er.Y. Rajani		
SUBJECT: POWER ELECTRONICS AND PLC	No of Days/Per week class allotted: **4** Class P/W**(60)**	Semester From Date:15/09/2022 To Date:22/12/2022 No. Of Weeks: **15**		
WEEK	**CLASS DAY**	**THEORY TOPICS**	**REMARKS**	
1st	1st	Construction, Operation, V-I characteristics & application of power diode, SCR, DIAC,TRIAC, Power MOSFET,GTO &IGBT	Date	Dean/Principal
	2nd	Two transistor analogy of SCR.		
	3rd	Gate characteristics of SCR.		
	4th	Switching characteristic of SCR during turn on and turn off.		
2nd	1st	Doubt clear class		
	2nd	Turn on methods of SCR,Turn off methods of SCR (Line commutation and Forced commutation)		
	3rd	Load Commutation ,Resonant pulse commutation		
	4th	Assignment		
3rd	1st	Assignment question Discussion		
	2nd	Voltage and Current ratings of SCR.		
	3rd	Over voltage protection		
	4th	Over current protection, Gate protection		
4th	1st	General layout diagram of firing circuit , R firing circuits		
	2nd	R-C firing circuit , UJT pulse trigger circuit		
	3rd	Synchronous triggering (Ramp Triggering) , Design of Snubber Circuits		

	4th	Controlled rectifiers Techniques(Phase Angle, Extinction Angle control), Single quadrant semi converter, two quadrant full converter and dual Converter		
5th	1st	Class Test		
	2nd	Working of single-phase half wave controlled converter with Resistive and R-L loads		
	3rd	Understand need of freewheeling diode		
	4th	Working of single phase fully controlled converter with resistive and R- L loads,Working of three-phase half wave controlled converter with Resistive load		
6th	1st	**Revision of Last Class**		
	2nd	Assignment		
	3rd	Working of three phase fully controlled converter with resistive load.		
	4th	Working of single phase AC regulator, Working principle of step up & step down chopper.		
7th	1st	Control modes of chopper , Operation of chopper in all four quadrants		
	2nd	Classify inverters, Explain the working of series inverter, Explain the working of parallel inverter		
	3rd	Explain the working of single-phase bridge inverter.		
	4th	Assignment		
8th	1st	Explain the basic principle of Cyclo-converter,Explain the working of single-phase step up & step down Cyclo-converter, Applications of Cyclo-converter		
	2nd	List applications of power electronic circuits		

	3rd	List the factors affecting the speed of DC Motors.		
	4th	Doubt Clearing Class and Assignment Questions Discussion.		
9th	1st	Speed control for DC Shunt motor using converter.		
	2nd	Speed control for DC Shunt motor using chopper.		
	3rd	Revision Class		
	4th	List the factors affecting speed of the AC Motors		
10th	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), Working of UPS with block diagram.		
	3rd	Battery charger circuit using SCR with the help of a diagram. , Basic Switched mode power supply (SMPS) - explain its working & applications		
	4th	Introduction of Programmable Logic Controller(PLC)		
11th	1st	Advantages of PLC		
	2nd	Different parts of PLC by drawing the Block diagram and purpose of each part of PLC		
	3rd	Class Test		
	4th	Applications of PLC , Ladder diagram		
12th	1st	Doubt Clear Class		
	2nd	Description of contacts and coils in the following states i)Normally open ii) Normally closed		
	3rd	iii) Energized output iv)latched Output v) branching		
	4th	Ladder diagrams for i) AND gate ii) OR gate and iii) NOT gate.		

13th	1st	Ladder diagrams for combination circuits using NAND,NOR, AND, OR and NOT , Timers-i)T ON ii) T OFF and iii)Retentive timer		
	2nd	Counters-CTU, CTD		
	3rd	Ladder diagrams using Timers and counters		
	4th	PLC Instruction set		
14th	1st	Ladder diagrams for following (i) DOL starter and STAR-DELTA starter		
	2nd	(ii) Stair case lighting (iii) Traffic light Control (iv) Temperature Controller		
	3rd	Principle of hybrid stepper motor, Applications of Stepper motor.		
	4th	Special control systems- Basics DCS & SCADA systems		
15th	1st	Special control systems- Basics DCS & SCADA systems		
	2nd	Computer Control–Data Acquisition, Direct Digital Control System (Basics only)		
	3rd	Doubt Clear Class		
	4th	Discussion Sample paper question		



HOD

DEAN

PRINCIPAL