Discipline:- ETC	Semester:- 5th	Name Of The Teaching Faculty:- Aditi Mohapatra
Subject:- PE & PLC	No Of Days Per week Class Allotted:-4	Semester From:- 01.07.2024 To:- 08.11.2024
No. of week	No. of class	Topic to be taught
1st	1	1.1 Construction, Operation, V-I characteristics & application of power diode, SCR, DIAC,TRIAC, Power MOSFET,GTO &IGBT
	2	1.2 Two transistor analogy of SCR.
	3	1.3 Gate characteristics of SCR.
	4	1.4 Switching characteristic of SCR during turn on and turn off.
2nd	1	1.5 Turn on methods of SCR.
	2	1.6 Turn off methods of SCR (Line commutation and Forced commutation)
	3	1.6.1 Load Commutation
	4	1.6.2 Resonant pulse commutation
3rd	1	1.7 Voltage and Current ratings of SCR.
	2	1.8 Protection of SCR
	3	1.8.1 Over voltage protection
	4	1.8.2 Over current protection .
4th	1	1.8.3 Gate protection 1.9 Firing Circuits
	2	1.9.1 General layout diagram of firing circuit
	3	1.9.2 R firing circuits
	4	1.9.3 R-C firing circuit
5th	1	1.9.4 UJT pulse trigger circuit
	2	1.9.5 Synchronous triggering (Ramp Triggering)
	3	1.10 Design of Snubber Circuits
	4	2.1 Controlled rectifiers Technlques(Phase Angle, Extinction Angle control), Single quadrant semi converter, two quadrant full converter and dual Converter
6th	1	2.2 Working of single-phase half wave controlled converter with Resistive and R-L loads.
	2	2.3 Understand need of freewheeling diode.
	3	2.4 Working of single phase fully controlled converter with resistive and R- L loads.
	4	2.5 Working of three-phase half wave controlled converter with Resistive load.

7th	1	2.6 Working of three phase fully controlled converter with resistive load.
	2	2.7 Working of single phase AC regulator
	3	2.8 Working principle of step up & step down chopper.
	4	2.9 Control modes of chopper
8th	1	2.10 Operation of chopper in all four quadrants
	2	3.1 Classify inverters.
	3	3.2 Explain the working of series inverter.
	4	3.3 Explain the working of parallel inverter
9th	1	3.4 Explain the working of single-phase bridge inverter.
	2	3.5 Explain the basic principle of Cyclo-converter.
	3	3.6 Explain the working of single-phase step up & step down Cyclo-converter.
	4	3.7 Applications of Cyclo-converter
10th	1	4.1 List applications of power electronic circuits.
	2	4.2 List the factors affecting the speed of DC Motors.
	3	4.3 Speed control for DC Shunt motor using converter.
	4	4.4 Speed control for DC Shunt motor using chopper.
11th	1	4.5 List the factors affecting speed of the AC Motors.
	2	4.6 Speed control of Induction Motor by using AC voltage regulator.
	3	4.7 Speed control of induction motor by using converters and inverters (V/F control).
	4	4.8 Working of UPS with block diagram. 4.9 Battery charger circuit using SCR with the help of a diagram.
12th	1	4.10 Basic Switched mode power supply (SMPS) - explain its working & applications
	2	5.1 Introduction of Programmable Logic Controller(PLC)
	3	5.2 Advantages of PLC
	4	5.3 Different parts of PLC by drawing the Block diagram and purpose of each part of PLC.
13th	1	5.4 Applications of PLC
	2	5.5 Ladder diagram
	3	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)
	4	5.7 Ladder diagrams for i) AND gate ii) OR gate and iii) NOT gate.
14th	1	5.8 Ladder diagrams for combination circuits using NAND,NOR, AND, OR and NOT
	2	5.9 Timers-i)T ON ii) T OFF and iii)Retentive timer
	3	5.10 Counters-CTU, CTD
	4	5.11 Ladder diagrams using Timers and counters

15th	1	5.12 PLC Instruction set
	2	5.13 Ladder diagrams for following (i) DOL starter and STAR-DELTA starter (ii) Stair case lighting (iii) Traffic light Control (iv) Temperature Controller
	3	REVISION
	4	REVISION

16/8/24

Teaching Faculty

16/8/24

HOD, ETC