

LESSON PLAN (Winter-2021)

Discipline: ETC	Semester: 5th	Name of the Teaching Faculty: P. BHAWANI/ AMIT KU. NAYAK
Subject: Power Electronics	No of Days /per week class allotted: 4	Semester From date: 01.10.2021 To date: 08.01.2022 No of Weeks:15
Date	Class Day	Theory / Practical Topics
4.10.21	1st	1. UNDERSTAND THE CONSTRUCTION AND WORKING OF POWER ELECTRONIC DEVICES(18) 1.1 Construction, Operation, V-I characteristics & application of power diode, SCR,
7.10.21	2nd	DIAC, TRIAC,
7.10.21	3rd	Power MOSFET, GTO & IGBT
9.10.21	4th	1.2 Two transistor analogy of SCR.
	1st	PUJA VACATION
	2nd	
	3rd	
	4th	
11.10.21	1st	1.3 Gate characteristics of SCR.
16.10.21	2nd	1.4 Switching characteristic of SCR during turn on and turn off.
16.10.21	3rd	1.5 Turn on methods of SCR.
18.10.21	4th	1.6 Turn off methods of SCR (Line commutation and Forced commutation)
21.10.21	1st	1.6.1 Load Commutation
23.10.21	2nd	1.6.2 Resonant pulse commutation
23.10.21	3rd	1.7 Voltage and Current ratings of SCR.
25.10.21	4th	1.8 Protection of SCR 1.8.1 Over voltage protection
28.10.21	1st	1.8.2 Over current protection 1.8.3 Gate protection
28.10.21	2nd	1.9 Firing Circuits 1.9.1 General layout diagram of firing circuit
30.10.21	3rd	1.9.2 R firing circuits. 1.9.3 R-C firing circuit
1.11.21	4th	1.9.4 UJT pulse trigger circuit. 1.9.5 Synchronous triggering (Ramp Triggering)
1.11.21	1st	1.10 Design of Snubber Circuits
6.11.21	2nd	2. UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS AND CHOPPERS(12) 2.1 Controlled rectifiers Techniques(Phase Angle, Extinction Angle control), Single quadrant semi converter,
8.11.21	3rd	two quadrant full converter and dual Converter
8.11.21	4th	2.2 Working of single-phase half wave controlled converter with Resistive and R-L loads
11.11.21	1st	2.3 Understand need of freewheeling diode.
13.11.21	2nd	2.4 Working of single phase fully controlled converter with resistive and R- L loads.
15.11.21	3rd	2.5 Working of three-phase half wave controlled converter with Resistive load
15.11.21	4th	2.6 Working of three phase fully controlled converter with resistive load.
18.11.21	1st	2.7 Working of single phase AC regulator.
20.11.21	2nd	2.8 Working principle of step up & step down chopper.

20.11.21	3rd	2.9 Control modes of chopper
22.11.21	4th	2.10 Operation of chopper in all four quadrants.
25.11.21	1st	3. UNDERSTAND THE INVERTERS AND CYCLO-CONVERTERS(8) 3.1 Classify inverters. 3.2 Explain the working of series inverter.
25.11.21	2nd	3.3 Explain the working of parallel inverter
27.11.21	3rd	3.4 Explain the working of single-phase bridge inverter.
29.11.21	4th	3.5 Explain the basic principle of Cyclo-converter.
29.11.21	1st	3.6 Explain the working of single-phase step up & step down Cyclo-converter.
2.12.21	2nd	3.7 Applications of Cyclo-converter.
4.12.21	3rd	4. UNDERSTAND APPLICATIONS OF POWER ELECTRONIC CIRCUITS(10) 4.1 List applications of power electronic circuits.
4.12.21	4th	4.2 List the factors affecting the speed of DC Motors.
6.12.21	1st	4.3 Speed control for DC Shunt motor using converter.
9.12.21	2nd	4.4 Speed control for DC Shunt motor using chopper.
9.12.21	3rd	4.5 List the factors affecting speed of the AC Motors.
11.12.21	4th	4.6 Speed control of Induction Motor by using AC voltage regulator.
13.12.21	1st	4.7 Speed control of induction motor by using converters and inverters (V/F control).
13.12.21	2nd	4.8 Working of UPS with block diagram.
16.12.21	3rd	4.9 Battery charger circuit using SCR with the help of a diagram.
18.12.21	4th	4.10 Basic Switched mode power supply (SMPS) - explain its working & applications
18.12.21	1st	5. PLC AND ITS APPLICATIONS(12) 5.1 Introduction of Programmable Logic Controller(PLC). 5.2 Advantages of PLC
20.12.21	2nd	5.3 Different parts of PLC by drawing the Block diagram and purpose of each part of PLC. 5.4 Applications of PLC. 5.5 Ladder diagram
23.12.21	3rd	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.
27.12.21	4th	5.7 Ladder diagrams for i) AND gate ii) OR gate and iii) NOT gate.
27.12.21	1st	5.8 Ladder diagrams for combination circuits using NAND,NOR, AND, OR and NOT
30.12.21	2nd	5.9 Timers-i)T ON ii) T OFF and iii)Retentive timer
30.12.21	3rd	5.10 Counters-CTU, CTD
3.1.22	4th	5.11 Ladder diagrams using Timers and counters
3.1.22	1st	5.12 PLC Instruction set
6.1.22	2nd	5.13 Ladder diagrams for following (i) DOL starter and STAR-DELTA starter (ii) Stair case lighting (iii) Traffic light Control (iv) Temperature Controller
8.1.22	3rd	5.14 Special control systems- Basics DCS & SCADA systems
8.1.22	4th	5.15 Computer Control–Data Acquisition, Direct Digital Control System (Basics only)

Signature of the Faculty