LESSON PLAN

Name of the Faculty : Dr. Sunil Kumar Dahiya
Discipline : Electronics & Communication Engineering
Semester : 4th
Subject : Power Electronics
Lesson Plan Duration : 15.01.2026 onwards
Work Load (Lecture/ Practical) per week (in hours): Lectures-03, Practicals-04

Week	Theory		Practical	
	Lecture	Topics	Practical	Topic
1	Unit -1	Role of Power electronics	1	To plot VI characteristic of an SCR.
	2	Construction, working principles of SCR		
	3	two transistor analogy of SCR, V-I characteristics of SCR.		
2	4	SCR specifications & ratings	2	To plot VI characteristics of TRIAC.
	5	di/dt & dv/dt protection of SCR		
	6	Different methods of SCR triggering.		
3	7	Different commutation circuits for SCR		Viva- voce
	8	Construction & working principle of DIAC, TRIAC and their V-I characteristics.		
	9	Revision of covered syllabus		
4	10	Construction, working principle of UJT	3	To plot VI characteristics of UJT.
	11	V-I characteristics of UJT.		
	12	UJT as relaxation oscillator		
5	13	Basic idea about the selection of Heat sink for thyristors.	4	To plot VI characteristics of DIAC.
	14	Application such as light intensity control, speed control of universal motors,		
	15	fan regulator, battery charger		
6	16	Revision of covered syllabus	5	To study UJT relaxation oscillator and observe different wave forms.
	17	Sessional-1		
	Unit-2	Single phase half wave controlled rectifier with load (R, R-L)		
7	19	Single phase half controlled full wave bridge rectifier (R, R-L)		Viva- voce
	20	Single phase fully controlled full wave bridge rectifier.		
	21	Single phase full wave centre tap controlled rectifier.		
8	22	Revision of covered syllabus	6	To observe wave shapes at

	Unit -3	Principle of operation of basic inverter circuits,		relevant points in a circuit of single-phase half wave controlled rectifier and effect of change of firing angle.
	24	series and parallel inverters & their applications.		
9	25	Choppers: Introduction, concepts of duty cycle		Viva- voce
	26	Revision of covered syllabus		
	27	types of choppers (Class A, Class B)		
10	28	choppers (Class C and Class D)	7	To observe wave shapes and measurement of voltage at relevant points in TRIAC based AC phase control circuit
	29	Step up and step down choppers		
	30	Dual Converters and cyclo converters: Introduction, types		
11	31	basic working principle of dual converters,		Viva- voce
	32	cyclo converters and their applications.		
	33	Revision of covered syllabus		
12	Unit-4	a) DC drive control - Half wave drives	8	To observe output wave shape in a circuit for single phase full wave controlled rectifier.
	35	Full wave drives		
	36	Revision of covered syllabus		
13	37	Chopper drives (Speed control of DC motor using choppers)		Viva- voce
	38	b) AC drive control - Phase control - Constant V/F operation		
	39	- Cyclo converter/Inverter drives.		
14	40	Revision of covered syllabus	9	Visit to any Solar Power Plant.
	41	Sessional-2		
	Unit-5	UPS, on-line		
15	43	UPS off line & its specifications	10	To study installation of UPS system and routine maintenance of batteries.
	44	Concept of high voltage DC transmission		
	45	Classification of batteries		
16	46	Introduction to solar power plants and their components		Viva- voce
	47	Revision of covered syllabus		
	48	Sessional-3		