

KIIT POLYTECHNIC
Department of Electrical Engineering

LESSON PLAN

Session	::	Winter – 2022
Course Type	::	Theory
Semester/Branch	::	5 th Semester, Electrical Engineering
Subject (with code)	::	Power Electronics and PLC. (TH-5)
Contact hours/week	::	4
Name of Faculty	::	Gautam Kumar Mahto

SL. No.	CLASS ID	COURSE CONTENT	MODE OF DELIVERY	EXHIBIT/ REFERENCE
1	1	Construction, Operation, layer diagram of SCR	Lecture (Explanation)	Study material
2	2	Static V-I Characteristic of SCR, Applications of SCR.	Lecture (Explanation)	Study material
3	3	Two transistor analogy of SCR.	Student presentation	Study material
4	4	Dynamics characteristics of SCR	Lecture (Explanation)	Study material
5	5	Different methods of Turn on of SCR	Lecture (Explanation)	Study material
6	6	Construction and principle of operation, Application & V-I characteristics of TRIAC.	Lecture (Explanation)	Study material
7	7	Construction, operation & application of DIAC & V-I characteristics of DIAC.	Lecture (Explanation)	Study material
8	8	R & RC firing circuit of SCR, UJT firing circuit of SCR	Lecture (Explanation)	Study material
9	9	Construction, operation & application of Power Diode V-I characteristics of Power Diode.	Lecture (Explanation)	Study material
10	10	Construction & Principle of operation of NPN/PNP Power Transistors. Application of Power Transistor.	Lecture (Explanation)	Study material
11	11	Class Test/Assignment Evaluation		
12	12	Construction, principle of operation and characteristics curve, application of Power MOSFET.	Student presentation	https://youtu.be/g30xTHas3aU
13	13	Construction, principle of operation and characteristics curve ,application of GTO	Lecture (Explanation)	Study material

14	14	Construction ,principle of operation and characteristics curve ,application of IGBT	Lecture (Explanation)	Study material
15	15	Construction, Principle of operation of UJT	Video content	https://youtu.be/T367E4I0n74
16	16	Different methods of Commutation of SCR. Line commutation, Auxiliary voltage commutation, Resonant commutation.	Lecture (Explanation)	Study material
17	17	Over voltage and over current protection of SCR.	Lecture (Explanation)	Study material
18	18	dv/dt protection, di/dt protection ,Snubber circuit of SCR.	Lecture (Explanation)	Study material
19	19	Class Test/Assignment Evaluation		
20	20	Half wave controlled rectifier with R load, Half wave controlled rectifier with RL load. Half wave controlled rectifier with RL load with FD	Lecture (Explanation)	Study material
21	21	Full wave controlled rectifier	Lecture (Explanation)	Study material
23	23	Dual converter	Lecture (Explanation)	Study material
24	24	Phase angle control, PWM control, Extinction angle control of SCR, Integral cycle control.	Video content	https://youtu.be/6SRdt6w8wO0
25	25	Different types of chopper, applications of Chopper, Step up chopper.	Lecture (Explanation)	Study material
26	26	Step down chopper	Lecture (Explanation)	Study material
27	27	Step up/ down chopper	Lecture (Explanation)	Study material
28	28	Single phase Inverter, Half bridge Inverter	Lecture (Explanation)	Study material
29	29	Full bridge Inverter	Lecture (Explanation)	Study material
30	30	Three phase inverter	Lecture (Explanation)	Study material
31	31	Class Test/Assignment Evaluation		
32	32	Step up Cyclo converter	Lecture (Explanation)	Study material
33	33	Step down Cyclo converter	Video content	https://youtu.be/6P4HZFRt9CM
34	34	Step up/down Cyclo converter.	Lecture (Explanation)	Study material
35	35	Different types of SMPS Fly back converter, Forward converter	Students presentation	https://youtu.be/AmV7OzPz_kU

36	36	Burglar alarm circuit, Smoke detector circuit,	Lecture (Explanation)	Study material
37	37	Proximity alarm circuit	Lecture (Explanation)	Study material
38	38	Introduction of Programmable Logic,Controller(PLC). Advantages of PLC, Application of PLC.	Lecture (Explanation)	Study material
39	39	Different parts of PLC, ladder diagram for AND gate, OR gate, NOR gate.	Lecture (Explanation)	Study material
40	40	Timers ,ON & OFF timers, retentive timer, Ladder diagram using timer and counter,	Lecture (Explanation)	Study material
41	41	PLC instruction set	Lecture (Explanation)	Study material
42	42	Class Test/Assignment Evaluation		
42	42	Ladder diagram for DOL starter, Stair case lighting ,Traffic control, Temperature controller	Lecture (Explanation)	Study material
43	43	Ladder diagram for DOL starter, Stair case lighting ,Traffic control, Temperature controller	Lecture (Explanation)	Study material
44	44	Ladder diagram for DOL starter, Stair case lighting ,	Lecture (Explanation)	Study material
45	45	Stair case lighting ,Traffic control, Temperature controller	Student presentation	https://youtu.be/AXHDOKTQId8
46	46	Special control system, Direct digital control system.	Lecture (Explanation)	Study material
47	47	Special control system, Direct digital control system.	Lecture (Explanation)	Study material
48	48	Special control system, Direct digital control system.	Lecture (Explanation)	Study material

Signature of Concern Teacher