

**KIIT POLYTECHNIC**  
Department of Electrical Engineering

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***LESSON PLAN***

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**Session** :: Winter – 2022  
**Course Type** :: Theory  
**Semester/Branch** :: 5<sup>th</sup> Semester, E&TC Engineering  
**Subject (with code)** :: Power Electronics. (TH-5)  
**Contact hours/week** :: 4  
**Name of Faculty** :: Mr Manoj Kumar Behera

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	<b>Class Test/Assignment Evaluation</b>		
12	12	Construction, principle of operation and characteristics curve, application of Power MOSFET.	Student presentation	<a href="https://youtu.be/g30xTHas3aU">https://youtu.be/g30xTHas3aU</a>
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	<a href="https://youtu.be/T367E4I0n74">https://youtu.be/T367E4I0n74</a>
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	<b>Class Test/Assignment Evaluation</b>		
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	<a href="https://youtu.be/6SRdt6w8wO0">https://youtu.be/6SRdt6w8wO0</a>
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	<b>Class Test/Assignment Evaluation</b>		
32	32	Step up Cyclo converter	Lecture (Explanation )	Study material
33	33	Step down Cyclo converter	Video content	<a href="https://youtu.be/6P4HZFRt9CM">https://youtu.be/6P4HZFRt9CM</a>
34	34	Step up/down Cyclo converter.	Lecture (Explanation )	Study material
35	35	Different types of SMPS Fly back converter, Forward converter	Students presentation	<a href="https://youtu.be/AmV7OzPz_kU">https://youtu.be/AmV7OzPz_kU</a>

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	<b>Class Test/Assignment Evaluation</b>		
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	<a href="https://youtu.be/AXHDOKTQId8">https://youtu.be/AXHDOKTQId8</a>
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