

POWER ELECTRONICS & PLC (PE & PLC)

LESSON PLAN

Degree/Diploma/+2 &
(Theory/Pract/Lab/Work)

Semester 5TH Branch ELECTRICAL

Month & Date	Course No. & Title	Brief note of the topics to be covered	No. of Class Requi
	<u>TH-5</u>	<u>CONSTRUCTION, WORKING OF POWER ELECTRONICS DEVICES</u>	
04/09/23	1.1	Construction, working VI characteristics of Power Diode, SCR, DIAC	02
05/09/23		TRIAC, POWER MOSFET.	
		GTO, IGBT	
07/09/23	1.2	Two Transistor analogy of SCR.	01
	1.3	Gate characteristics of SCR.	
	1.4	TURN-ON & TURN-OFF Switching of SCR.	
08/09/23	1.5	Turn on methods of SCR	01
11/09/23	1.6	Turn-off methods of SCR	01
12/09/23	1.6.1	Load commutation	01
13/09/23	1.6.2	Resonant Pulse commutation	01
14/09/23	1.7	V _d I ratings of SCR	01
15/09/23	1.8	Over Voltage protection	01
18/09/23	1.8.2	Over current Protection	01

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21/09/23	TH-5 1.8.3	Gate Protection.	01
22/09/23	1.9	Firing circuits	01
25/09/23	1.9.1	Layout diagram of Firing circuits	01
26/09/23	1.9.2	R-Firing circuit	01
27/09/23	1.9.3	R-C Firing circuit	01
28/09/23	1.9.4	UJT Pulse Trigger circuit	01
03/10/23	1.9.5	Synchronous Triggering	01
04/10/23	1.10	Design of Snubber circuit	01
	2	WORKING OF CONVERTERS AC REGULATORS & CHOPPERS	
5/10/23	2.1	Controlled Converter Techniques (Phase angle, Extinction Angle)	01
		Single quadrant, semi-converter, dual converter.	
06/10/23	2.2	Working of 1- ϕ half wave controlled converter with R & R-L load	01
09/10/23	2.3	3- ϕ Need of Free Wheeling Diode.	01

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10/10/23	TH-5 2.4)	1- Φ Fully controlled converter with R, & R-L load	01
11/10/23	2.5)	3- Φ Fully controlled converter with R-load	01
12/10/23	2.6)	3- Φ Fully controlled converter with R-load	01
13/10/23	2.7)	1- Φ AC Regulator.	01
16/10/23	2.8)	Step-up & Step-down chopper.	01
17/10/23	2.9)	control modes of chopper.	01
18/10/23	2.10)	Four quadrant chopper operation	01
	3)	INVERTERS & CYCLO-CONVERTERS.	
19/10/23	3.1)	Classify Inverters	01
20/10/23	3.2)	Series Inverter.	01
01/11/23	3.3)	Parallel Inverters.	01
02/11/23	3.4)	Single- Φ Bridge Inverter.	01
06/11/23	3.5)	Cyclo-converter	01
07/11/23	3.6)	Step-up cycloconverter	01
08/		Step-down cycloconverter.	

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08/11/23	TH-5 37)	Applications of cyclo-converter.	01
	4)	APPLICATIONS OF POWER ELECTRONIC CRT.	
	4.1)	Applications of Power Electronic crt.	
09/11/23	4.2)	Factors affecting the speed of DC Motors	01
10/11/23	4.3)	Speed control of DC motor using converter	01
13/11/23	4.4)	Speed control of DC motor using chopper	01
	4.5)	Factors affecting the speed of AC motors	
14/11/23	4.6)	Speed control of IM by AC Voltage regulation.	01
15/11/23	4.7)	Speed control of IM by using converters & Inverters (V/F control)	02
16/11/23			
17/11/23	4.8)	Working of UPS	01
20/11/23	4.9)	Battery charger with UPS	01
21/11/23	4.10)	Basic SMPS (Working & its application)	01

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	<u>TH-5</u>	<u>5) PLC & ITS APPLICATION</u>	
22/11/23	5.1)	Introduction to PLC	01
23/11/23	5.2)	Advantages of PLC	
	5.3)	Application of PLC	01
	5.4)	Label Different Parts of PLC	
24/11/23	5.5)	Ladder Diagrams.	01
	5.6)	Descriptions of contacts & coils.	
		(i) Normally open.	
		(ii) Normally closed	
28/11/23		(iii) Energized output.	
		(iv) Latched output	
		(v) Branching	
29/11/23	5.7)	Ladder diagrams	01
		i) AND ii) NOT	
		iii) OR gates.	
	5.8)		

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30/11/23	TH-5 5.8)	Ladder diagrams for NAND, NOR, AND, OR & NOT	01
01/12/23	5.9)	Timers i) T-on ii) T-OFF	01
		iii) Retentive Timer	
02/12/23	5.10)	Counters - CTU, CTD	01
	5.11)	Ladder diagrams using Timers & counters.	
03/12/23	5.12)	PLC Instruction set	01
	5.13)	Ladder diagrams for	
06/12/23		(i) DOL starter.	01
		(ii) STAR-DELTA starter.	
07/12/23		(iii) Stair-case lighting.	01
		(iv) Traffic light control	
		(v) Temperature controller.	

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