

**BLACK IA ON SCHOOL OF ENGINEERING, JHARSUGU A****LESSON PLAN****Session (2023-2024)**

<b>Discipline:</b> Electrical Engg.	<b>Semester:</b> 5th, Winter/2023	<b>Name of the Teaching Faculty:</b> Amit Senapati Lecturer
<b>Subject:</b> Power Electronics & PLC, Theory-5	<b>No. of Days/Week:</b> 04	<b>Start Date:</b> 01/08/2023 <b>End Date:</b> 30/11/2023

<b>Week</b>	<b>Class Day</b>	<b>Theory Topics</b>
1st	1st	Construction, operation & application of Power Diode, V-I Characteristics of Power Diode.
	2nd	Construction, Operation, layer diagram of SCR
	3rd	Two transistor analogy of SCR.
	4th	Static V-I Characteristic of SCR, Applications of SCR.
2nd	1st	Dynamics characteristics of SCR.
	2nd	Construction and principle of operation, Application and characteristics of DIAC.
	3rd	Construction and principle of operation ,Application and characteristics of TRIAC
	4th	Construction, principle of operation and characteristics, applications of Power MOSFET.
3rd	1st	Construction & Principle of operation of NPN Power Transistors.
	2nd	Construction ,principle of operation and characteristics curve, application of GTO
	3rd	Construction ,principle of operation and characteristics curve, application of IGBT
	4th	Different methods of Turn on of SCR
4th	1st	R &RC firing circuit of SCR
	2nd	UJT firing circuit of SCR.
	3rd	Synchronous triggering of SCR
	4th	<i>Doubt Clearing class</i>

5th	1st	<i>Assignment Evaluation &amp; Class Test</i>
	2nd	<i>QUIZ Test-1</i>
	3rd	Different methods of Commutation of SCR
	4th	Line commutation
6th	1st	Auxiliary voltage commutation Resonant commutation
	2nd	Over voltage and over current protection of SCR
	3rd	Dv/dt protection, di/dt protection ,Snubber circuit of SCR.
	4th	Phase angle control, PWM control, Extinction angle control of SCR, Integral cycle control.
7th	1st	Half wave controlled rectifier with R load,
	2nd	Half wave controlled rectifier with RL load .
	3rd	Half wave controlled rectifier with RL load with FD
	4th	Full wave controlled rectifier
8th	1st	Single quadrant semi converter
	2nd	Step UP chopper
	3rd	Step down chopper
	4th	Step up/ down chopper
9th	1st	Class A, Class B, Class C chopper
	2nd	Class D, Class E chopper
	3rd	Half bridge voltage source Inverter
	4th	Full bridge inverter
10th	1st	Series Inverter
	2nd	Parallel Inverter
	3rd	Step up cyclo converter
	4th	Step up Cyclo converter
11th	1st	Step down cyclo converter
	2nd	Off line UPS/On line UPS.
	3rd	Different types of SMPS.
	4th	Fly back converter
12th	1st	Forward converter
	2nd	<i>QUIZ Test-2</i>
	3rd	Proximity alarmcircuit
	4th	Burglar alarm circuit

13th	1st	Smoke detector circuit, Proximity alarm circuit
	2nd	Introduction of Programmable Logic Controller (PLC) Advantages of PLC, Application of PLC.
	3rd	Different parts of PLC, ladder diagram for AND gate, OR gate, NOR gate.
	4th	Timers ,ON & OFF timers, retentive timer, Ladder diagram using timer and counter
14th	1st	PLC instruction set
	2nd	Ladder diagram for DOL starter, Stair case lighting ,Traffic control, Temperature controller
	3rd	Special control system, Direct digital control system.
	4th	<i>Assignment Evaluation &amp; Class Test</i>
15th	1st	<i>Doubt Clearing class</i>
	2nd	<i>Discussion of Previous year questions</i>
	3rd	<i>Discussion of Previous year questions</i>
	4th	<i>Discussion of Previous year questions</i>