


BALASORE SCHOOL OF ENGINEERING, BALASORE

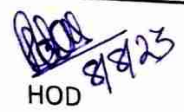
LESSON PLAN/SEMESTER - 5TH (2023-WINTER)

IB - POWER ELECTRONICS AND PLC				THEORY-05			
CULTY- Mr. RANJIB KUMAR JENA				BRANCH-ELECTRICAL(SEC-A)			
.NO.	CH NO.	MONTH WISE NO.OF CLASS	DATE	TOPICS TO BE COVERED	NO.OF CLASSES AS PER SYLLABUS	NO.OF CLASSES AS PER LESSON PLAN	
1	1	AUG	1/8/2023	Introduction to Power Electronics and PLC	18	17	
							1. THYRISTOR
2			2/8/2023	Construction,operation,V-I char. Of Power Diode			
3			4/8/2023	Construction,operation,V-I char. Of BJT			
4			8/8/2023	Construction,operation,V-I char. Of MOSFET			
5			9/8/2023	Construction,operation,V-I char. Of IGBT			
6			10/8/2023	Construction,operation,V-I char. Of DIAC AND TRIAC Construction,operation,V-I char. Of GTO			
7			11/8/2023	1.1 Principle of operation of SCR(Thyristor) Static V-I Characteristics of Thyristor			
8			16/8/23	1.2 Two transistor analogy of Thyristor			
9			17/8/23	1.3 Gate char. Of SCR			
10			18/8/23	1.4 Swaitching characterstics of Thyristor during turn on and turn off			
11			21/8/23	1.5 Turn on methods of Thyristor			
12			22/8/23	1.6 Turn off methods of SCR(Line and Forced commutation) 1.6.1 Load commutation 1.6.2 Resonant pulse commutation			
13			23/8/23	1.7 Voltzge and Current rating of Thyristor			
14			24/8/23	1.8 Protection of Thyristor 1.8.1 Over voltage protection 1.8.2 Over current protection			
15			25/8/23	1.8.3 Gate protection			
16			31/8/23	1.9. FIRING CIRCUITS FOR THYRISTER 1.9.1 General layout diagram of firing circuit Gate Triggering circuits ;			
17	1/9/2023	1.9.2 Resistance firing					
18	4/9/2023	1.9.3 Resistance capacitance firing.					
19	5/9/2023	1.9.4 UJT pulse trigger circuit 1.9.5 Synchroscope triggering(Ramp triggering)					
			2.PHASE CONTROLLED RECTIFIER (CONVERTER) (PRINCIPLE OF OPERATION WITH CKT DIAGRAM AND DC VOLTAGE AND D. C CURRENT EQUATION ONLY)				
20	2	SEPT	7/9/2023	2.1 Controlled rectifier technique(Phase angle, Extintion angle) Single quadrant semi converter, Two quadrant fully coverter	12	10	
21							
22			8/9/2023	2.2 Single phase half wave converter with			
23			11/9/2023	2.3 Need of freewheeling diode			
24			12/9/2023	2.4 Single phase full wave converter with 2.5 Three phase half wave converter with			
25			13/9/23	2.6 Three phase fully controlled			
26			14/9/23	2.7 Single phase half wave and full wave A. C regulator. 2.8 Principle of step down and step up			
27			15/9/23	2.9 Control modes of chopper			
28			21/9/23	2.10 Operetion of chopper in all four quadrants.			

		3. INVERTER and CYCLOCONVERTERS			
3		22/9/23	3.1 Classify Inverter	8	7
		25/9/23	3.2 Working of series inverter.		
		26/9/23	3.3 Working Parallel inverter		
		27/9/23	3.4 Single phase Bridge Inverter		
		28/9/23	3.5 Principle of cycloconverter operation.		
		29/9/23	3.6 Single phase to single phase circuit step Up and step down Cyclo converter.		
	3/10/2023	3.7 Application of cycloconverter			
		4. A.C & D.C DRIVES			
4	OCT		4.1 List applications of power electronics circuit.	10	8
		4/10/2023	4.2 List the factors affecting the speed of dc motor		
		5/10/2023	4.3 Speed control of dc shunt motor using converter		
		6/10/2023	4.4 Speed control of dc shunt motor using chopper.		
		9/10/2023	4.5 List the factors affecting the speed of ac		
		10/10/2023	4.6 Speed control of induction motor using ac voltage regulator		
		11/10/2023	4.7 Speed control of induction motor using converter and		
		12/10/2023	4.8 Ups using block diagram		
			4.9 Battery charger using SCR		
			13/10/23		
		5. PLC AND ITS APPLICATIONS			
5	OCT	30/10/23	5.1 Introduction of Programmable Logic Controller(PLC)	12	14
			5.2 Advantages of PLC		
		31/10/23	5.3 Different parts of PLC by drawing the Block diagram and purpose of each part of PLC		
	NOV	1/11/2023	5.4 Applications of PLC		
			5.5 Ladder diagram		
		2/11/2023	5.6 Description of contacts and coils in the following states i) Normally open ii) Normally closed iii) Energized output		
		3/11/2023	iv) latched Output v) branching		
		3/11/2023	5.7 Ladder diagrams for i) AND gate ii) OR gate and iii) NOT gate.		
		6/11/2023	5.8 Ladder diagrams for combination circuits using NAND,		
		7/11/2023	NOR, AND, OR and NOT		
		8/11/2023	5.9 Timers-i) T ON ii) T OFF and iii) Retentive timer		
		9/11/2023	5.10 Counters-CTU, CTD		
		10/11/2023	5.11 Ladder diagrams using Timers and counters		
		13/11/23	5.12 PLC Instruction set		
		14/11/23	5.13 Ladder diagrams for following		
15/11/23	(i) DOL starter and STAR-DELTA starter (ii) Stair case lighting				
16/11/23	(iii) Traffic light Control				
17/11/23	5.14 Special control system Basic DCS and SCADA system				
	5.15 Computer control Data acquisition, Direct digital control system(basic only)				
				60	57

Month	Chapter	REMARKS
AUGUST	Ch-01 cont.	20%
SEPTEMBER	ch-01,ch-02 cont.	35%
OCTOBER	ch-02,ch-03,ch-04	30%
NOVEMBER	ch-05	15%

Lecturer

 8/8/23

HOD

 8/8/23

PRINCIPAL

 8/8/23