



Lesson Plan-cum-Course Progress Report

Doc. Type: FM-TL-07

Rev. No: 1

Rev. Date:

Name of the Institute :	C.V.RAMAN POLYTECHNIC
Department :	ELECTRICAL ENGINEERING
Semester/Division/Branch :	5TH SEMESTER
Subject Name with code :	POWER ELECTRONICS & PROGRAMMABLE LOGIC CONTROLLER
Total No. of Class (Required)	60
Faculty Name :	SUBHANKAR DASH

Class No.	Brief Description of the Topic/Chapter to be taught	Date (Lesson Plan):					Remarks
		Status of Course Cover (write Yes, if taught)	Sign (Faculty/LA)	Date (Course Covered)	Course Prog. Reviewed by		
1	Construction, Operation, V-I characteristics & application of power diode, SCR,DIAC,TRIAC, Power MOSFET,GTO &IGBT						
2	Construction, Operation, V-I characteristics & application of power diode, SCR,DIAC,TRIAC, Power MOSFET,GTO &IGBT						
3	Two transistor analogy of SCR.						
4	Gate characteristics of SCR.						
5	Switching characteristic of SCR during turn on and turn off.						
6	Turn on methods of SCR.						
7	Load Commutation						
8	Resonant pulse commutation						
9	Voltage and Current ratings of SCR.						
10	Over voltage protection						
11	Over current protection						
12	Gate protection						
13	General layout diagram of firing circuit						
14	R firing circuits						
15	R-C firing circuit						
16	UJT pulse trigger circuit						
17	Synchronous triggering (Ramp Triggering)						
18	Design of Snubber Circuits						
19	Controlled rectifiers Techniques(Phase Angle, Extinction Angle control), Single quadrant semi converter, two quadrant full converter and dual						
20	Controlled rectifiers Techniques(Phase Angle, Extinction Angle control), Single quadrant semi converter, two quadrant full converter and dual Converter						
21	Working of single-phase half wave controlled converter with Resistive and R-L loads.						
22	Working of single-phase half wave controlled converter with Resistive and R-L loads.						
23	Understand need of freewheeling diode.						
24	Working of single phase fully controlled converter with resistive and R- L loads.						
25	Working of three-phase half wave controlled converter with Resistive load.						
26	Working of three phase fully controlled converter with resistive load.						
27	Working of single phase AC regulator.						
28	Working principle of step up & step down chopper.						
29	Control modes of chopper						
30	Operation of chopper in all four quadrants.						
31	Classify inverters.						
32	Explain the working of series inverter.						
33	Explain the working of parallel inverter						
34	Explain the working of single-phase bridge inverter.						
35	Explain the basic principle of Cyclo-converter.						
36	Explain the working of single-phase step up & step down Cyclo-converter.						
37	Explain the working of single-phase step up & step down Cyclo-converter.						

Class No.	Brief Description of the Topic/Chapter to be taught	Status of Course Cover (write Yes, if taught)	Sign (Faculty/LA)	Date (Course Covered)	Course Prog. Reviewed by	Remarks
38	Applications of Cyclo-converter.					
39	List applications of power electronic circuits.					
40	List the factors affecting the speed of DC Motors.					
41	Speed control for DC Shunt motor using converter.					
42	Speed control for DC Shunt motor using chopper.					
43	List the factors affecting speed of the AC Motors.					
44	Speed control of Induction Motor by using AC voltage regulator.					
45	Speed control of induction motor by using converters and inverters (V/F control).					
46	Working of UPS with block diagram.					
47	Battery charger circuit using SCR with the help of a diagram.					
48	Basic Switched mode power supply (SMPS) - explain its working & applications					
49	Introduction of Programmable Logic Controller(PLC),Advantages of PLC.					
50	Different parts of PLC by drawing the Block diagram and purpose of each part of PLC,Applications of PLC.					
51	Ladder diagram,Description of contacts and coils in the following states i)Normally open ii) Normally closed iii) Energized output iv)latched Output v)branching					
52	Ladder diagrams for i) AND gate ii) OR gate and iii) NOT gate.					
53	Ladder diagrams for combination circuits using NAND,NOR, AND, OR and NOT					
54	Timers-i)T ON ii) T OFF and iii)Retentive timer					
55	Counters-CTU, CTD					
56	Ladder diagrams using Timers and counters					
57	PLC Instruction set					
58	Ladder diagrams for following (i) DOL starter and STAR-DELTA starter (ii) Stair case lighting (iii) Traffic light Control (iv) Temperature Controller					
59	Special control systems- Basics DCS & SCADA systems					
60	Computer Control–Data Acquisition, Direct Digital Control System (Basics only)					

(Sign. of Faculty/LA)
Prepared by (Lesson Plan)

(Sign. of H.O.D/In-charge)
Reviewed by (Lesson Plan)

(Sign. of Principal)
Approved by (Lesson Plan)