ACADEMIC LESSON PLAN OF WINTER 2021

Discipline: Electrical	Semester: 6th(1st shift)	Name of the Teaching Faculty: SUNITA ORAM
Subject: PE&PLC	No. of days/per week class allotted:4p/week	Semester From:1ST OCT. 2021 to 8TH JAN. 2022 No. of weeks:14 weeks
Week	Class Day	Theory Topics
1st	01/10/2021	**1. UNDERSTAND THE CONSTRUCTION AND WORKING OF POWER ELECTRONIC** DEVICES 1.1 Construction, Operation, V-I characteristics & application of power diode, SCR, DIAC,TRIAC, Power MOSFET,GTO &IGBT(CONTD.)
	01/10/2021	1.1 Construction, Operation, V-I characteristics & application of power diode, SCR, DIAC,TRIAC, Power MOSFET,GTO &IGBT
	01/10/2021	1.2 Two transistor analogy of SCR.
2nd	07/10/2021	1.3 Gate characteristics of SCR.
	07/10/2021	1.4 Switching characteristic of SCR during turn on and turn off. (CONTD.)
	08/10/2021	1.4 Switching characteristic of SCR during turn on and turn off.
	08/10/2021	1.5 Turn on methods of SCR.
	08/10/2021	1.6 Turn off methods of SCR (Line commutation and Forced commutation) 1.6.1 Load Commutation
3rd	21/10/2021	1.6.2 Resonant pulse commutation
	21/10/2021	1.7 Voltage and Current ratings of SCR.
	22/10/2021	1.8 Protection of SCR 1.8.1 Over voltage protection
	22/10/2021	1.8.2 Over current protection 1.8.3 Gate protection
	22/10/2021	1.9 Firing Circuits 1.9.1 General layout diagram of firing circuit
4th	27/10/2021	1.9.2 R firing circuits
	28/10/2021	1.9.3 R-C firing circuit
	28/10/2021	1.9.4 UJT pulse trigger circuit
	29/10/2021	1.9.5 Synchronous triggering (Ramp Triggering)
	29/10/2021	1.10 Design of Snubber Circuits
	29/10/2021	**2. UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS AND CHOPPERS.** 2.1 Controlled rectifiers Techniques(Phase Angle, Extinction Angle control), Single quadrant semi converter, two quadrant full converter and dual Converter.(CONTD.)
5th	03/11/2021	2.1 Controlled rectifiers Techniques(Phase Angle, Extinction Angle control), Single quadrant semi converter, two quadrant full converter and dual Converter.
	05/11/2021	2.2 Working of single-phase half wave controlled converter with Resistive and R-L loads.
6th	10/11/2021	2.3 Understand need of freewheeling diode.
	11/11/2021	2.4 Working of single phase fully controlled converter with resistive and R- L loads.
	11/11/2021	2.5 Working of three-phase half wave controlled converter with Resistive load
	12/11/2021	2.6 Working of three phase fully controlled converter with resistive load.
7th	15/11/2021	2.7 Working of single phase AC regulator.
	15/11/2021	2.8 Working principle of step up & step down chopper. .
	17/11/2021	2.9 Control modes of chopper
8th	22/11/2021	2.10 Operation of chopper in all four quadrants(CONTD.)
	22/11/2021	2.10 Operation of chopper in all four quadrants

	24/11/2021	**3. UNDERSTAND THE INVERTERS AND CYCLO-CONVERTERS** 3.1 Classify inverters.
	26/11/2021	3.2 Explain the working of series inverter.
	26/11/2021	3.3 Explain the working of parallel inverter
9th	29/11/2021	3.4 Explain the working of single-phase bridge inverter.
	29/11/2021	3.5 Explain the basic principle of Cyclo-converter.
	01/12/2021	3.6 Explain the working of single-phase step up & step down Cyclo-converter.(CONTD.)
	03/12/2021	3.6 Explain the working of single-phase step up & step down Cyclo-converter.
10th	06/12/2021	3.7 Applications of Cyclo-converter.
	06/12/2021	**4. UNDERSTAND APPLICATIONS OF POWER ELECTRONIC CIRCUITS** 4.1 List applications of power electronic circuits.
	08/12/2021	4.2 List the factors affecting the speed of DC Motors.
	10/12/2021	4.3 Speed control for DC Shunt motor using converter.
	11/12/2021	4.4 Speed control for DC Shunt motor using chopper.
11th	13/12/2021	4.5 List the factors affecting speed of the AC Motors.
	13/12/2021	4.6 Speed control of Induction Motor by using AC voltage regulator.
	15/12/2021	4.7 Speed control of induction motor by using converters and inverters (V/F control).
	17/12/2021	4.8 Working of UPS with block diagram.
	18/12/2021	4.9 Battery charger circuit using SCR with the help of a diagram.
12th	20/12/2021	4.10 Basic Switched mode power supply (SMPS) - explain its working & applications
	20/12/2021	**5. PLC AND ITS APPLICATIONS** 5.1 Introduction of Programmable Logic Controller(PLC) 5.2 Advantages of PLC
	22/12/2021	5.3 Different parts of PLC by drawing the Block diagram and purpose of each part of PLC. 5.4 Applications of PLC
	24/12/2021	5.5 Ladder diagram 5.6 Description of contacts and coils in the following states i)Normally open ii) Normally closed iii) Energized output iv)latched Output v) branching
	24/12/2021	5.7 Ladder diagrams for i) AND gate ii) OR gate and iii) NOT gate.
13th	27/12/2021	5.8 Ladder diagrams for combination circuits using NAND,NOR, AND, OR and NOT
	27/12/2021	5.9 Timers-i)T ON ii) T OFF and iii)Retentive timer
	29/12/2021	5.10 Counters-CTU, CTD
	31/12/2021	5.11 Ladder diagrams using Timers and counters
14th	03/01/2022	5.12 PLC Instruction set
	03/01/2022	5.13 Ladder diagrams for following (i) DOL starter and STAR-DELTA starter (ii) Stair case lighting (iii) Traffic light Control (iv) Temperature Controller
	05/01/2022	5.14 Special control systems- Basics DCS & SCADA systems
	07/01/2022	5.15 Computer Control–Data Acquisition, Direct Digital Control System (Basics only)

Signature of Teaching Faculty

ACADEMIC LESSON PLAN OF WINTER 2021

Discipline: Electrical	Semester: 6th(2nd shift)	Name of the Teaching Faculty: SUNITA ORAM
Subject: PE&PLC	No. of days/per week class allotted:4p/week	Semester From:1ST OCT. 2021 to 8TH JAN. 2022 No. of weeks:14 weeks
Week	Class Day	Theory Topics
1st	01/10/2021	**1. UNDERSTAND THE CONSTRUCTION AND WORKING OF POWER ELECTRONIC** DEVICES 1.1 Construction, Operation, V-I characteristics & application of power diode, SCR, DIAC,TRIAC, Power MOSFET,GTO &IGBT(CONTD.)
2nd	04/10/2021	1.1 Construction, Operation, V-I characteristics & application of power diode, SCR, DIAC,TRIAC, Power MOSFET,GTO &IGBT
	05/10/2021	1.2 Two transistor analogy of SCR.
	07/10/2021	1.3 Gate characteristics of SCR.
	08/10/2021	1.4 Switching characteristic of SCR during turn on and turn off. (CONTD.)
3rd	21/10/2021	1.4 Switching characteristic of SCR during turn on and turn off.
	22/10/2021	1.5 Turn on methods of SCR.
4th	25/10/2021	1.6 Turn off methods of SCR (Line commutation and Forced commutation) 1.6.1 Load Commutation
	26/10/2021	1.6.2 Resonant pulse commutation
	27/10/2021	1.7 Voltage and Current ratings of SCR.
	28/10/2021	1.8 Protection of SCR 1.8.1 Over voltage protection
	29/10/2021	1.8.2 Over current protection 1.8.3 Gate protection
5th	01/11/2021	1.9 Firing Circuits 1.9.1 General layout diagram of firing circuit
	02/11/2021	1.9.2 R firing circuits
	03/11/2021	1.9.3 R-C firing circuit
6th	08/11/2021	1.9.4 UJT pulse trigger circuit
	09/11/2021	1.9.5 Synchronous triggering (Ramp Triggering)
	10/11/2021	1.10 Design of Snubber Circuits
	11/11/2021	**2. UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS AND CHOPPERS.** 2.1 Controlled rectifiers Techniques(Phase Angle, Extinction Angle control), Single quadrant semi converter, two quadrant full converter and dual Converter.(CONTD.)
	11/11/2021	2.1 Controlled rectifiers Techniques(Phase Angle, Extinction Angle control), Single quadrant semi converter, two quadrant full converter and dual Converter.
	13/11/2021	2.2 Working of single-phase half wave controlled converter with Resistive and R-L loads.
7th	15/11/2021	2.3 Understand need of freewheeling diode.
	16/11/2021	2.4 Working of single phase fully controlled converter with resistive and R- L loads.
	18/11/2021	2.5 Working of three-phase half wave controlled converter with Resistive load
	20/11/2021	2.6 Working of three phase fully controlled converter with resistive load.
	20/11/2021	2.7 Working of single phase AC regulator.

8th	22/11/2021	2.8 Working principle of step up & step down chopper. .
	23/11/2021	2.9 Control modes of chopper
	25/11/2021	2.10 Operation of chopper in all four quadrants(CONTD.)
	26/11/2021	2.10 Operation of chopper in all four quadrants
	27/11/2021	**3. UNDERSTAND THE INVERTERS AND CYCLO-CONVERTERS** 3.1 Classify inverters.
9th	29/11/2021	3.2 Explain the working of series inverter.
	30/11/2021	3.3 Explain the working of parallel inverter
	02/12/2021	3.4 Explain the working of single-phase bridge inverter.
	03/12/2021	3.5 Explain the basic principle of Cyclo-converter.
	04/12/2021	3.6 Explain the working of single-phase step up & step down Cyclo-converter.(CONTD.)
10th	06/12/2021	3.6 Explain the working of single-phase step up & step down Cyclo-converter.
	07/12/2021	3.7 Applications of Cyclo-converter.
	09/12/2021	**4. UNDERSTAND APPLICATIONS OF POWER ELECTRONIC CIRCUITS** 4.1 List applications of power electronic circuits.
	10/12/2021	4.2 List the factors affecting the speed of DC Motors.
	11/12/2021	4.3 Speed control for DC Shunt motor using converter.
	11/12/2021	4.4 Speed control for DC Shunt motor using chopper.
11th	13/12/2021	4.5 List the factors affecting speed of the AC Motors.
	14/12/2021	4.6 Speed control of Induction Motor by using AC voltage regulator.
	16/12/2021	4.7 Speed control of induction motor by using converters and inverters (V/F control).
	17/12/2021	4.8 Working of UPS with block diagram.
	18/12/2021	4.9 Battery charger circuit using SCR with the help of a diagram.
	18/12/2021	4.10 Basic Switched mode power supply (SMPS) - explain its working & applications
12th	20/12/2021	**5. PLC AND ITS APPLICATIONS** 5.1 Introduction of Programmable Logic Controller(PLC) 5.2 Advantages of PLC
	21/12/2021	5.3 Different parts of PLC by drawing the Block diagram and purpose of each part of PLC. 5.4 Applications of PLC
	23/12/2021	5.5 Ladder diagram 5.6 Description of contacts and coils in the following states i)Normally open ii) Normally closed iii) Energized output iv)latched Output v) branching
	24/12/2021	5.7 Ladder diagrams for i) AND gate ii) OR gate and iii) NOT gate.
13th	27/12/2021	5.8 Ladder diagrams for combination circuits using NAND,NOR, AND, OR and NOT
	28/12/2021	5.9 Timers-i)T ON ii) T OFF and iii)Retentive timer
	30/12/2021	5.10 Counters-CTU, CTD
	31/12/2021	5.11 Ladder diagrams using Timers and counters
14th	03/01/2022	5.12 PLC Instruction set
	04/01/2022	5.13 Ladder diagrams for following (i) DOL starter and STAR-DELTA starter (ii) Stair case lighting (iii) Traffic light Control (iv) Temperature Controller
	06/01/2022	5.14 Special control systems- Basics DCS & SCADA systems
	07/01/2022	5.15 Computer Control–Data Acquisition, Direct Digital Control System (Basics only)

Signature of Teaching Faculty