GIETPOLYTECHNIC,JAGATPUR,CUTTACK

LESSONPLAN

Discipline: ELECTRICAL	Semester:5th	Name Of The Teaching Faculty:RUPAKKUMARSAHOO
Subject: Power electronics(Th5)	No.Of Days Per Week Class Allotted: 04 P	Semeste From Date: 01/08/2023 To Date: .. 1-12-2023 No.ofweeks:15
Week	ClassDay	TheoryTopic
1st week	1st	**Unit1:UNDERSTANDTHECONSTRUCTION&WORKINGOF POWER ELECTRONICS** ➢ 1.1:Construction,operation,VIcharacteristics&applicationof power diode, SCR, DIAC, TRIAC,power MOSFET, GTO & IGBT
	2nd	➢ 1.2:TwotransistoranalogyofSCR ➢ 1.3:GatecharacteristicsofSCR
	3rd	➢ 1.4:SwitchingcharacteristicsofSCRduringturnon&turnoff
	4th	➢ 1.5:TurnonmethodsofSCR
2nd week	1st	➢ 1.6:TurnoffmethodsofSCR(Linecommunication&Forced communication) 1.6.1:Loadcommunication
	2nd	➢ 1.6.2:Resonantpulsecommunication
	3rd	➢ 1.7:VoltageandCurrentratingsofSCR
	4th	➢ 1.8:Protectionof SCR 1.8.1:Overvoltageprotection
3rd week	1st	➢ 1.8.2:Overcurrentprotection 1.8.3:Gateprotection
	2nd	➢ 1.9:Firingcircuits 1.9.1:generallayoutdiagramoffiringcircuits
	3rd	➢ 1.9.2:Rfiringcircuits
	4th	➢ 1.9.3:R-Cfiringcircuits 1.9.4:UJTpulsetriggercircuit
4th week	1st	➢ 1.9.5:synchronoustriggering(Ramptriggering) ➢ 1.10:Designofsnubbercircuits
	2nd	**UNIT 2: UNDERSTAND THE WORKING OFCONVERTERS,ACREGULATORSANDCHOPPERS** ➢ 2.1:Controlledrectifierstechniques
	3rd	➢ 2.2:Workingofsinglephasehalfwavecontrolledconverterwith resistive and R-L loads
	4th	➢ 2.3:Understandneedoffreewheelingdiode
5th week	1st	➢ 2.4:Workingofsinglephasefullycontrolledconverterwith resistive and R-L loads
	2nd	➢ 2.5:workingofthreephasehalfwavecontrolledconverterwith resistiveload

	3rd	➢ 2.6:Workingofthreephasefullycontrolledconverterwith resistive load
	4th	➢ 2.7:WorkingofsinglephaseACregulator
6thweek	1st	➢ 2.8:Workingprincipleofstepup&stepdownchopper ➢ 2.9:Controlmodesofchopper
	2nd	➢ 2.10:Operationofchopperinallfourquadrants
	3rd	UNIT3:UNDERSTANDTHEINVERTERSANDCYCLO-CONVERTERS ➢ 3.1:Classifyinverters ➢ 3.2:Workingofseriesinverter
	4th	➢ 3.3:Workingofparallelinverter ➢ 3.4:Workingofsinglephasebridgeinverter
7thweek	1st	➢ 3.5:Basicprincipleofcyclo-converter ➢ 3.6:Workingofsinglephasestepup&stepdowncyclo-converter
	2nd	➢ 3.7:ApplicationsofCyclo-converter
	3rd	UNIT4:UNDERSTANDAPPLICATIONSOFPOWERELECTRONICS CIRCUITS ➢ 4.1:Applicationofpowerelectroniccircuits
	4th	➢ 4.2:Listthefactorsaffectingthespeedofdcmotors
8thweek	1st	➢ 4.3:SpeedcontrolforDCshuntmotorusingconverter
	2nd	➢ 4.4:SpeedcontrolforDCshuntmotorusingchopper
	3rd	➢ 4.5:ListthefactorsaffectingspeedoftheACmotors
8thweek	4th	➢ 4.6:Speedcontrolofinductionmotorbyusing ACvoltage regulator
9thweek	1st	➢ 4.7:SpeedcontrolofInductionmotorbyusingconvertersand inverters
	2nd	➢ 4.8:WorkingofUPSwithblockdiagram
	3rd	➢ 4.9:BatterychargercircuitusingSCRwiththehelpofadiagram
	4th	➢ 4.10:Working&applicationofSMPS
10thweek	1st	➢ 4.10:Working&applicationofSMPS
	2nd	UNIT5:PLCANDITSAPPLICATIONS ➢ 5.1:IntroductionofPLC
	3rd	➢ 5.2:AdvantagesofPLC
	4th	➢ 5.2:AdvantagesofPLC
11thweek	1st	➢ 5.3:DifferentpartsofPLC
	2nd	➢ 5.4:ApplicationofPLC
	3rd	➢ 5.5:Ladderdiagram
	4th	➢ 5.6:Descriptionofcontactsand coils
12thweek	1st	➢ 5.6.1:Normallyopen
	2nd	➢ 5.6.2:Normallyclosed
	3rd	➢ 5.6.3:Energizedoutput
	4th	➢ 5.6.4:latchedoutput,branching
13thweek	1st	➢ 5.7.1:LadderdiagramforAND gate
	2nd	➢ 5.7.2:LadderdiagramforORgate&NOTgate

	3rd	➢ 5.8:Ladderdiagramforcombinationcircuitusing NAND,NOR, AND,OR & NOT
	4th	➢ 5.8:Ladderdiagramforcombinationcircuitusing NAND,NOR, AND,OR&NOT
14th week	1st	➢ 5.8:Ladderdiagramforcombinationcircuitusing NAND,NOR, AND,OR & NOT
	2nd	➢ 5.9:Timers I. TON II. TOFF III. Retentivetimer
	3rd	➢ 5.10:Counters:CTU, CTD
	4th	➢ 5.11:Ladderdiagramsusingtimers&counters
15th week	1st	➢ 5.12:PLCinstructionset
	2nd	➢ 5.13:Ladderdiagramsforfollowing I. DOLstarter&star-delta starter
	3rd	➢ 5.14:specialcontrolsystem
	4th	➢ 5.15:computercontrol:dataacquisition

1/8/23

Signature of Teaching Faculty

1/8/23

Signature of Sr.Lecturer

1/8/23

Signature of Principal

Head of Dept. / HOD
Electrical & ETC Engg.
G.P. E.T (POLY), [redacted]