**GBN Govt. Polytechnic Nilokheri, Karnal**

**Electrical Engineering Department**

**Lesson plan**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name of Faculty** | | | Sh. Ajay Kishor | | |
| **Discipline** | | | Electrical Engineering | | |
| **Semester** | | | 6th | | |
| **Subject** | | | Industrial electronics and control of drives | | |
| **LessonPlanDuration** | | | From(From March 2023 to June 2023) | | |
| **Work load[Theory +Practical] PerWeek** | | | [04+02] | | |
| **Week** | **Day** | **TheoryTopic/Assignment/Test** | | **No.** | **Practical** |
| 1st | 1 | **Unit-I IntroductiontoSCR** | | 1 | To draw V-I characteristics ofan SCR |
| 2 | Constructionand workingprinciplesofan SCR | |
| 3 | CharacteristicsofSCR,Twotransistoranalogy | |
| 4 | SCR specifications and rating, Construction,  workingprinciplesandV-Icharacteristicsof DIAC | |
| 2nd | 1 | And TRIAC and Quadriac | | 2 | To draw V-I characteristics ofaTRIAC |
| 2 | BasicideaabouttheselectionofheatsinksforSCR  andTRIACS | |
| 3 | Methods of triggering a Thyristor, Study of  triggeringcircuits | |
| 4 | UJT,itsConstruction,workingprinciplesandV-I  characteristics | |
| 3rd | 1 | UJTasrelaxationoscillator | | 3 | To draw V-I characteristics ofaDIAC |
| 2 | Commutation of Thyristors | |
| 3 | Series and parallel operation of Thyristors | |
| 4 | Applications of SCR,TRIACS and Quadriac | |
| 4th | 1 | dv/dt and di/dt protection of SCR | | 4 | Revision/Filechecking |
| 2 | Assignment/Class test of1stunit | |
| 3 | **Unit2:IntroductiontoControlledRectifiers** | |
| 4 | Singlephasehalfwavecontrolledrectifierwith  resistiveload | |
| 5th | 1 | WithInductiveloadandfreewheelingdiode | | 5 | To draw uni-junction transistor characteristics |
| 2 | Singlephasehalfcontrolled fullwaverectifier | |
| 3 | Singlephasefullycontrolledfullwaverectifier  bridge | |
| 4 | Singlephasefull waveCentretappedrectifier | |
| 6th | 1 | Threephase full wave half controlled bridge  rectifier | | 6 | Observe the output wave of anUJTrelaxation oscillator |
| 2 | Threephasefullwavefullycontrolledbridge  rectifier | |
| 3 | Assignment/Class test of1stunit | |
| 4 | Revision/checking/Problemssolutions | |
| 7th | 1 | **Unit3:IntroductiontoInverters,Choppers,Dual**  **ConvertersandCycloConverters** | | 7 | Mid- term viva-voice/filechecking |
| 2 | WorkingprinciplesandapplicationofVSI | |
| 3 | WorkingprinciplesandapplicationofCSI | |
| 4 | Choppers-introduction,typesofchoppersandtheir  workingprinciplesandapplications | |
| 8th | 1 | Class A,BandC | | 8 | Observe the wave shape acrossSCR and load of anilluminationcontrol circuit |
| 2 | Class Dand E | |
| 3 | Dualconverters-introduction,workingprinciples  andapplications | |
| 4 | Cyclo-converters-introduction | |
|  | 1 | types,workingprinciplesandapplications | |  |  |
| 9th | 2 | Assignment/Class test of1stunit | | 9 | Fan speed regulator using TRIAC Quadriac (fabrication of this circuit) |
| 3 | Revision/checking/Problemssolutions | |
| 4 | **Unit4:ThyristorControlofElectricDrives** | |
| 10th | 1 | DCdrivescontrol | | 10 | Speed-control of a DC shuntmotororuniversal motor |
| 2 | Halfwavedrives | |
| 3 | Fullwavedrives | |
| 4 | Chopperdrives | |
| 11th | 1 | ACdrivescontrol | | 11 | Revision/Filechecking |
| 2 | Phasecontrol | |
| 3 | Variable frequency a.c. drives | |
| 4 | ConstantV/Fapplication | |
| 12th | 1 | Voltagecontrolledinverterdrives | | 12 | Revision/Filechecking |
| 2 | Constantcurrentinverterdrives | |
| 3 | Cycloconvertors controlled AC drives | |
| 4 | SlipcontrolACdrives | |
| 13th | 1 | Assignment/Classtest | | 13 | Single phase controlledrectifier |
| 2 | Problemsolution/testcheck | |
| 3 | **Unit5:UninterruptedPowerSupplies** | |
| 4 | UPS,UPSonline,offline | |
| 14th | 1 | SMPS, CVT | | 14 | Use of Variable FrequencyDrive for running a 3 phaseInductionmotor |
| 2 | Storagedevices(batteries)andtheirmaintenance | |
| 3 | Revisionofimportanttopics | |
| 4 | Revisionofimportanttopics | |
| 15th | 1 | Assignment/Classtest | | 15 | Revision/File checking/Internal Practical |
| 2 | Problemsolution/testcheck | |
| 16th | 1 | Revision/Review/TestofoldHSBTEPapers | | 14 | Use of Variable FrequencyDrive for running a 3 phaseInductionmotor |
| 2 | Revision/Review/TestofoldHSBTEPapers | |