**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 | BasicideaabouttheselectionofheatsinksforSCRandTRIACS |
| 3 | Methods of triggering a Thyristor, Study oftriggeringcircuits |
| 4 | UJT,itsConstruction,workingprinciplesandV-Icharacteristics |
| 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 | Singlephasehalfwavecontrolledrectifierwithresistiveload |
| 5th | 1 | WithInductiveloadandfreewheelingdiode | 5 | To draw uni-junction transistor characteristics |
| 2 | Singlephasehalfcontrolled fullwaverectifier |
| 3 | Singlephasefullycontrolledfullwaverectifierbridge |
| 4 | Singlephasefull waveCentretappedrectifier |
| 6th | 1 | Threephase full wave half controlled bridgerectifier | 6 | Observe the output wave of anUJTrelaxation oscillator |
| 2 | Threephasefullwavefullycontrolledbridgerectifier |
| 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,typesofchoppersandtheirworkingprinciplesandapplications |
| 8th | 1 | Class A,BandC | 8 | Observe the wave shape acrossSCR and load of anilluminationcontrol circuit |
| 2 | Class Dand E |
| 3 | Dualconverters-introduction,workingprinciplesandapplications |
| 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 |