Lesson plan

|  |  |
| --- | --- |
| **Name of Faculty** |  Lokesh |
| **Discipline** |  Electrical Engineering |
| **Semester** | 6th |
| **Subject** | Industrial electronics and control of drives |
| **Lesson Plan Duration** | From 15 -02-2024 to 14-06- 2024 |
| **Work load [Theory] Per Week** | [04] |

|  |  |  |
| --- | --- | --- |
| **Week** | **Day** | **Theory Topic/ Assignment/ Test** |
| 1st | 1 | **Unit-I Introduction to SCR** |
| 2 | Construction and working principles of an SCR |
| 3 | Characteristics of SCR, Two transistor analogy |
| 4 | SCR specifications and rating, |
| **2nd** | 5 | Construction, working principles and V-I characteristics of DIAC |
| 6 |  TRIAC and Quadriac |
| 7 | Basic idea about the selection of heat sinks for SCR and TRIACS |
| 8 | Methods of triggering a Thyristor,  |
| 3rd | 9 | Study of triggering circuits |
| 10 | UJT, its Construction,  |
| 11 | working principles and  |
| 12 | V-I characteristics |
| 4th | 13 | UJT as relaxation oscillator |
| 14 | Commutation of Thyristors |
| 15 | Series and parallel operation of Thyristors |
| 16 | Applications of SCR, TRIACS and Quadriac |
| 5th | 17 | dv/dt and di/dt protection of SCR |
| 18 | Revision/checking/Problems solutions |
| 19 | Assignment/Class test of 1st unit |
| **Unit2: Introduction to Controlled Rectifiers** |
| 20 | Single phase half wave controlled rectifier with resistive load |
| 6th | 21 | With Inductive load and  |
| 22 | freewheeling diode |
| 23 | Assignment/Class test  |
| 24 | Single phase half controlled full wave rectifier |
|  **7th** | 25 | Single phase fully controlled full wave rectifier bridge |
| 26 | Single phase full wave Centre tapped rectifier |
| 27 | Three phase full wave half controlled bridge rectifier |
| 28 | Three phase full wave fully controlled bridge rectifier |
| 8th | 29 | Revision/checking/Problems solutions |
| 30 | Assignment/Class test of 2nd unit |
| **Unit3: Introduction to Inverters, Choppers, Dual****Converters and Cyclo Converters** |
| 31 | Introduction to Inverters,  |
| 32 | Working and types of Inverter |
| 9th | 33 | Working principles and application of VSI |
| 34 | Working principles and application of CSI |
| 35 | Choppers-introduction, types of choppers  |
| 36 | and their working principles and applications |
| 10th | 37 | Class A,B and C |
| 38 | Class D and E |
| 39 | Dual converters-introduction,  |
| 40 | working principles and applications |
| 11th | 41 | Cyclo-converters- introduction |
| 42 | types, working principles  |
| 43 | Application of Cyclo converter |
| 44 | Revision/checking/Problems solutions |
| 12th | 45 | Assignment/Class test of 3rd unit |
| **Unit4:Thyristor Control of Electric Drives** |
| 46 | DC drives control |
| 47 | Half wave drives |
| 48 | Full wave drives |
| 13th | 49 | Chopper drives |
| 50 | AC drives control |
| 51 | Phase control |
| 52 | Variable frequency a.c. drives |
| 14th | 53 | Constant V/F application |
| 54 | Voltage controlled inverter drives |
| 55 | Constant current inverter drives |
| 56 | Cyclo convertors controlled AC drives |
| 15th | 57 | Slip control AC drives |
| 58 | Assignment / Class test |
| 59 | Revision Unit – VI Problem solution/ test check |
| **Unit5: Uninterrupted Power Supplies** |
| 60 | UPS, UPS online, off line |
| 16th | 61 | Stabilizers,  |
| 62 | SMPS |
| 63 | Storage devices (batteries) and their maintenance |
| 64 | Revision of important topics |
| 17th | 65 | Revision of important topics |
| 66 | Revision – Unit - V |
| 67 | Assignment / Class test |
| 68 | Problem solution/ test check |
| 18th | 69 | Questionarrie Unit – I, II, III |
| 70 | Questionarrie Unit – IV, V |
| 71 | Revision/Review/Test of old HSBTE Papers |
| 72 | Revision/Review/Test of old HSBTE Papers |