**Lesson Plan**

**Name of Faculty :- Sanjay Mehta**

**Discipline :- Electrical Engineering**

**Semester :- Fifth Semester**

**Subject :- IECD**

**Lesson Plan Duration:- 15 Week**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Theory** | | **lab** | |
| **1st** | **Lecture Day** | **Topic** |  |  |
| **1st** | Construction and working principles of an SCR |  |  |
| **2nd** | Two transistor analogy |
| **3rd** | Characteristics of SCR |  |  |
|  | **4th** | SCR specifications and rating |  |  |
| **2nd** | **5th** | Construction, working principles and V-I characteristics of DIAC. |  | To draw V-I characteristics of an SCR |
| **6th** | Construction, working principles and V-I characteristics of TRIAC |
| **7th** | Construction, working principles and V-I characteristics of Quadriac |  |  |
| **8th** | Basic idea about the selection of heat sinks for SCR and TRIACS |
| **3rd** | **9th** | Methods of triggering a Thyristor. Study of triggering circuits |  | To draw V-I characteristics of a TRIAC |
| **10th** | ----do------- |
| **11th** | ------do----- |  |  |
| **12th** | UJT, its Construction, working principles and V-I characteristics |
| **4th** | **13th** | UJT relaxation oscillator |  | To draw V-I characteristics of a DIAC |
| **14th** | Commutation of Thyristors |
| **15th** | Series operation of Thyristors |  |  |
| **16th** | Parallel operation of Thyristors |
| **5th** | **17th** | Applications of SCR, TRIACS and Quadriac for light intensity control. |  | To draw uni-junction transistor characteristics |
| **18th** | Application of SCR for speed control of DC and universal motor |
| **19th** | Application of SCR as a fan regulator |  |  |
| **20th** | Application of SCR as a battery charger. |
| **6th** | **21st** | revision |  | Observe the output wave of an UJT relaxation oscillator |
| **22nd** | **revision** |
| **23rd** | Single phase half wave controlled rectifier with resistive load and inductive load,  concept of free wheeling diode |  |  |
| **24th** | **-----do-----** |
| **7th** | **25th** | -----do---- |  | Observe the wave shape across SCR and load of an illumination control circuit |
| **26th** | Single phase half controlled full wave rectifier |
| **27th** | **-----do------** |  |  |
| **28th** | Single phase fully controlled full wave rectifier bridge |
| **8th** | **29th** | ---do----- |  |
| **30th** | Three phase full wave half controlled bridge rectifier |
| **31st** | **----do--------** |  | Fan speed regulator using TRIAC Quadriac (fabrication of this circuit) |
| **32nd** | Three phase full wave fully controlled bridge rectifier |
| **9th** | **33rd** | ----do----- |  | Speed-control of a DC shunt motor or universal motor |
| **34th** | Inverter-introduction, working principles |
| **35th** | voltage and current driven series and parallel inverters and applications |  |  |
| **36th** | ----do----- |
| **10th** | **37th** | Choppers-introduction, types of choppers |  | To observe the output wave shape on CRO of a Single phase half controlled full wave rectifier |
| **38th** | choppers -working principles and applications |
| **39th** | ----do------- |  |  |
| **40th** | Dual converters-introduction, working principles |
| **11th** | **41st** | Dual converters-applications |  | Single phase controlled rectifier |
| **42nd** |  |
| **43rd** | Cyclo-converters- introduction |  |  |
| **44th** | Cyclo-converters- types |
| **12th** | **45th** | Cyclo-converters- applications |  | Use of Variable Frequency Drive for running a 3 phase Induction motor |
| **46th** | DC drives control (Basic Concept) |
| **47th** | Half wave drives, Full wave drives |  |  |
| **48th** | Chopper drives  AC drives control |
| **13th** | **49th** | Phase control  Variable frequency a.c. drives |  |  |
| **50th** | Constant V/F application  Voltage controlled inverter drives |
| **51st** | Constant current inverter drives |  |  |
| **52nd** | Cyclo convertors controlled AC drives |
| **14th** | **53rd** | Slip control AC drives |  |  |
| **54th** | UPS, Stabilizers, |
| **55th** | SMPS |  |  |
| **56th** | UPS online, off line |
| **15th** | **57th** | Storage devices (batteries) and their maintenance |  |  |
| **58th** | revision |
| **59th** | revision |  |  |
| **60th** | revision |