**Govt. Polytechnic Chhapar**

**Electrical Engineering Department**

**Lesson Plan**

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| **Name of Faculty** | **Mrs. Mukesh** |
| **Discipline** | **Electrical Engineering** |
| **Semester** | **6th** |
| **Subject** | **Industrial Electronics and Control of Drives** |
| **Lesson Plan Duration** | **From March 2022 to June 2022** |
| **Work load [Theory + Practical] Per Week** | **[04+03]** |

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