Lesson Plan

Name of Faculty :- Visiting Faculty

Discipline :- Electrical Engineering

Semester :- 1st Semester

Subject :- Principle of Electrical Engineering

Lesson Plan Duration :- 13-14 Week

Theory		Practical	
Lecture Day	**Topic**	**Practical Day**	**Topic**
1	Introduction, Nature of Electricity, Electric current,	1	**PRACTICAL-1** Familiarization of basic components/equipment like ammeter, voltmeter, watt meter, resistance, capacitor, inductor, energy meter, power factor meter, CRO, multi-meter etc and their operation, uses .
2	Electrical Energy, Electrical power and their unit.		
3	Resistance, conductivity and resistivity, resistance properties.	2	**PRACTICAL-1** PRACTICAL-1 Familiarization of basic components/equipment like ammeter, voltmeter, watt meter, resistance, capacitor, inductor, energy meter, power factor meter, CRO, multi-meter etc and their operation, uses .
4	Rating and wattages of Electrical appliances, heating effect of Electrical current. Introduction to Capacitors, capacitance, Variable capacitor, Factors affecting capacitance of a capacitor and its various connections.		
5	Factors affecting capacitance of a capacitor and its various connections.	3	**PRACTICAL-2** Determine the value of resistance using colour coding method.
6	Energy stored in capacitor, Charging and discharging of a capacitor.		
7	Charging and discharging of a capacitor.	4	**PRACTICAL-3** Observation of change in resistance of a bulb in hot and cold conditions, using voltmeter and ammeter
8	REVISION UNIT-1		

9	Unit-2 DC Machines Ohm's law with practical implementation.	**5**	**PRACTICAL-4** To charge and discharge a capacitor and to show the graph on C.R.O.
10	Definition of DC circuit, types of DC circuits		
11	Concept of voltage source & current source, connections and their conversions.	**6**	**PRACTICAL-5** Verification of laws of capacitors in series and parallel.
12	Concept of voltage source & current source, connections and their conversions.		
13	Wheatstone Bridge.	**7**	**PRACTICAL-6** To verify ohm's law by drawing a graph between voltage and current
14	Kirchhoff's Laws-KVL and KCL.		
15	Star – Delta connections and their conversion.	**8**	**PRACTICAL-7** Verification of Kirchhoff's Current Law in a dc circuit.
16	UNIT III Electrostatics & Magneto statics Concepts of Electrostatics, Coulomb's law.		
17	Concept of magnetism, Magnetic field, Magnetic lines of force	**9**	**PRACTICAL-7** Verification of Kirchhoff's Current Law in a dc circuit.
18	Definition of Electromagnetism,		
19	Magnetic effect of electric current, direction of magnetic field and current.	**10**	**PRACTICAL-8** Verification of Kirchhoff's Voltage Laws in a dc circuit.
20	Current carrying conductors in a magnetic field and methods to find its direction, applications		
21	Analogy between electric and magnetic circuit.	**11**	**PRACTICAL-9** Measurement of current and voltage in series resistive circuit. Measurement of current and voltage in parallel resistive circuit.
22	UNIT IV Electro-Magnetic Induction Determination of Ampere Turns, Series & parallel magnetic circuits,		
23	Magnetic curve (B-H curve) - cause of Hysteresis, Hysteresis loss.	**12**	**PRACTICAL-9** Measurement of current and voltage in series resistive circuit. Measurement of current and voltage in parallel resistive circuit.

24	Faraday's laws of electro-magnetic induction.	**13**	**PRACTICAL-10** To find the ratio of inductance of a coil having air-core and iron-core respectively and to observe the effect of introduction of a magnetic core on coil inductance.
25	E.M.F induced in a conductor. Energy stored in an Inductor,	**14**	**PRACTICAL-10** To find the ratio of inductance of a coil having air-core and iron-core respectively and to observe the effect of introduction of a magnetic core on coil inductance.
26	Eddy currents, Eddy current losses.		
27	UNIT V Batteries Electrolysis,	**15**	**PRACTICAL-11** Verification of Faraday's law of electromagnetic induction
28	Faradays law of electrolysis, Concept of Cells, Concept of Batteries Solution		
29	Charging methods of storage battery and charging indications. Characteristics of battery,	**16**	**PRACTICAL-12** To obtain BH curve of a magnetic material
30	Introduction to maintenance free batteries.		
31	Disposal of batteries	**17**	**PRACTICAL-13** Demonstration of parts of a battery and find the specific gravity of battery, Demonstration of charging and discharging of Battery and measure the terminal voltage During charging and discharging condition.
32	Revision of Unit 1		
33,34	Revision of Unit 2	**18**	**PRACTICAL-13** Demonstration of parts of a battery and find the specific gravity of battery, Demonstration of charging and discharging of Battery and measure the terminal voltage During charging and discharging condition.
35,36	Revision of Unit 3,4		

Lesson Plan

Name of the Faculty : **Ms. Parul Trake**

Discipline : **Electrical Engineering**

Semester : **1st Semester**

Subject : **Fundamental of Information Technology**

Lesson Plan Duration : **13-14 Week**

Week	Theory		Practical	
	Lecture Day	**Topic (including assignment / test)**	**Practical Day**	**Topic**
	1	Brief history of development of computers, Definition of Computer, Block diagram of a Computer, Hardware, Software, Booting: Cold and Hot Booting,	1	Browser features, browsing, using various search engines, writing search queries.
	2	Interaction between the CPU and Memory with Input/Output devices, Function of CPU and major functional parts of CPU.	2	Visit various e-governance/Digital India portals, understand their features, services offered.
	3	Memory, Bit, Nibble, Byte, KB, MB, GB, TB, PB, Functions of memory, Use of storage devices in a Computer, List types of memory used in a Computer, Importance of cache memory, CPU speed and CPU word length	3	. Read Wikipedia pages on computer hardware components, look at those components in lab, identify them, recognize various ports/interfaces and related cables, etc.
	4	Understanding browser, Introduction to WWW, efficient use of search engines, awareness about Digital India portals (state and national portals) and college portals.	4	Using Administrative Tools/Control Panel Settings of Operating Systems.
	5	Advantages of Email, Various email service providers, Creation of email id, sending and receiving emails		
	6	attaching documents with email and drive. Effective use of Gmail, G-Drive, Google Calendar, Google Sites		
	7	Google Sheets, Online mode of communication using Google Meet & WebEx		
	8	Introduction to Programming, Steps involved in problem solving, Definition of Algorithm, Definition of Flowchart		

	9	Steps involved in algorithm development, differentiate algorithm and flowchart, symbols used in flowcharts		
	10	algorithms for simple problems, flowcharts for simple problems		
	11	Practice logic building using flowchart/algorithms		
	12	Office Tools like LibreOffice/OpenOffice/MSOffice.		
	13	OpenOffice Writer – Typesetting Text and Basic Formatting, Inserting Images, Hyperlinks, Bookmarks, Tables and Table Properties in Writer Introducing LibreOffice/OpenOffice Calc		
	14	Working with Cells, Sheets, data, tables, using formulae and functions, using charts and graphics.		
	15	OpenOffice Impress – Creating and Viewing Presentations		
	16	Inserting Pictures and Tables, Slide Master and Slide Design, Custom Animation.		
	17	Introduction to Digital Marketing – Why Digital Marketing, Characteristics of Digital Marketing, Tools for Digital Marketing,		
	18	Effective use of Social Media like LinkedIn, Google+, Facebook, Twitter, etc.: Features of Social media		
	19	Advantages and Disadvantages of Social Media. Revision of important topics		
	20	Class test		

Lesson Plan

Name of the Faculty : **Mrs. Sharmila**
Discipline : **Electrical Engineering**
Semester : **3rd Semester**
Subject : **ELECTRICAL AND ELECTRONICS ENGINEERING MATERIALS**

Lesson Plan Duration : **13-14 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Classification of materials into conducting, Semi conducting		
	2	Insulating materials. Atomic theory, Energy band theory. Classifications of materials on the basis of atomic structure and energy bands. Characteristics of materials.		
	3	Types of conducting material such as low resistivity and high resistivity materials.		
	4,5	Properties and applications of different low resistivity materials such as silver, Gold, copper (hard drawn, annealed copper), aluminum, steel, ACSR and its alloys like copper alloy (brass, bronze) etc.		
	6,7	Properties and applications of different high resistivity material such as carbon, tungsten, platinum, mercury, lead, and its alloys like Constantan or eureka, Brass phosphor bronze, nichrome, manganin, tin-lead alloy etc.		
	8	Semi-conductors Materials and their Applications,		
	9	Commonly used semiconducting material Germanium and silicon and their properties. Types of Semiconductor etc.		
	10	Characteristics of good Insulating material, Electrical, thermal, chemical, visual, mechanical		
	11	Physical properties of Insulating materials. Types of Insulating materials. classification of insulating material on the basis of temperature		
	12	Gaseous Insulating Materials: Properties and applications of air, nitrogen and sulphur hexafluoride (SF-6) gases		
	13	Liquid Insulating Materials: Properties and applications of Mineral and Insulating oil for transformers (mineral oil), switchgears etc, synthetic insulating liquid (Pyranol).		
	14	Solid Insulating Materials: Properties, types and applications of Plastics such as polyvinyl chloride (PVC), Polyethylene, polystyrene, epoxy resin, Bakelite, Melamines, silicon resins etc		
	15	Natural Insulating materials, properties and their applications: Mica, asbestos, ceramic materials (porcelain and steatite)		
	16	Glass, Cotton, Silk, Jute, Paper (dry and impregnated) Rubber, Bitumen		
	17	Teflon, Silicon Grease , Insulating varnishes for coating and impregnation, Enamels for winding wires, wood etc		

	18	Characteristics and types of magnetic material, Properties of soft magnet material like Iron silicon alloy		
	19,20	Nickel iron alloy, Mu metal, soft ferrites, grain orientation, Cold rolled grain oriented silicon steels (C.R.G.O) etc. and their applications		
	21,22	Properties of hard magnet material like Tungsten steel alloy, chromium steel, cobalt steel, Hard ferrites etc. and their applications.		
	23	Cobalt steel, Hard ferrites etc. and their applications.		
	24	Thermocouples, Bimetals, soldering, fuse, materials and their applications		
	25	Material used in fabrications of electrical machines such as motors		
	26	Generators, transformers etc		
	27	Class Test		
	28,29	Problems, Doubts & their solution		
	30	Revision of important topics		

Lesson Plan

Name of the Faculty : **Visiting Faculty**

Discipline : **Electrical Engineering**

Semester : **3th Semester**

Subject : **Analog and Digital Electronics**

Lesson Plan Duration : **13-14 Week**

Week	Theory		Practical	
	Lecture Day	**Topic (including assignment / test)**	**Practical Day**	**Topic**
	1	Concept of insulators, conductors and semiconductors	1	To Plot V-I characteristics of a PN junction diode, To Plot V-I characteristics of a Zener diode, Observe the output of waveform:
	2	Intrinsic and extrinsic semiconductor	2	Half-wave rectifier circuit using one diode, Full-wave rectifier circuit using two diodes
	3	P and N type semiconductor and their conductivity	3	Observe the output of waveform of Bridge-rectifier circuit using four diodes.
	4	Effect of temperature on conductivity of intrinsic semiconductor	4	Plotting of input and output characteristics and calculation of parameters of transistors in CE configuration., Plotting of input and output characteristics and calculation of parameters of transistors in CB configuration
	5	PN junction diode, mechanism of current flow in PN junction	5	To study weighing machine using load cell
	6	Forward and reverse biased PN junction, potential barrier	6	Plotting of V-I characteristics of a FET
	7	Drift and diffusion currents, depletion layer	7	Basic logic operations of AND, OR, NOT gates
	8	V-I characteristics of diodes	8	Verification of truth tables for NAND, NOR and Exclusive OR (EX-OR) and Exclusive NOR (EX-NOR) gates
	9, 10	Diode as half-wave, full wave and bridge rectifiers, Peak Inverse Voltage, rectification efficiencies and ripple factor calculations	9	Realization of logic functions with the help of NAND or NOR gates.

	11	Concept of filters,	10	To design a half adder using XOR and NAND gates and verification of its operations.
	12	Types of diodes, characteristics and applications of Zener diodes	11	Construction of a full adder circuit using XOR and NAND gates and verify its operation
	13	Concept of a bipolar transistor, PNP and NPN transistors, CB, CE, CC configurations of a transistor	12	Verification of truth table for IC flip-flops (At least one IC each of D latch, D flip-flop, JK flip-flops)
	14, 15, 16	Transistor as an amplifier in CE Configuration, Current amplification factors, Comparison of CB, CE and CC Configurations	13	Verification of truth table for encoder and decoder ICs. Verification of truth table for Mux and De-Mux
	17, 18	Construction, operation and characteristics of FETs, FET as an amplifier		
	19	Construction, operation and characteristics of a MOSFET, Comparison of JFET, MOSFET and BJT		
	20	Distinction between analog and digital signal. Decimal, Binary, octal and hexadecimal number system		
	21, 22, 23	Conversion from decimal and hexadecimal to binary and vice-versa, Binary addition and subtraction		
	24,25	Sequential Circuits such as Half adder, Full adder		
	26	Mux, De-Mux, Encoder and Decoder		
	27,28	Combinational Circuits like Latch, Flip Flops, shift registers and counters		
	29,30	A/D and D/A Converters and its Applications		

LESSON PLAN				
NAME OF FACULTY	**Mr. Mohd. Mohsin**			
DISCIPLINE	**Electrical Engineering**			
SEMESTER	**3rd**			
SUBJECT	**Electrical Machines - I**			
LESSON PLAN DURATION	**14 week**			
(LECTURE/ PRACTICAL)	**THEOR Y-3**		**PRACTICAL - 4**	
WEEK	**THEOR Y**		**PRACTICAL**	
	LECTURE DAY	**TOPIC**	**PRACTI CAL DAY**	**TOPIC**
1st	1	Definition of motor and generator.	1	Measurement of the angular displacement of the rotor of a slip-ring induction motor on application of DC to stator of motor winding in sequence and simultaneously to each phase of rotor winding
	2	Concept of torque.	2	
	3	Torque development due to alignment of two fields, concept of torque angle.	3	
2nd	4	Electro-magnetically induced emf	4	Measurement of the angular displacement of the rotor of a slip-ring induction motor on application of DC to stator of motor winding in sequence and simultaneously to each phase of rotor winding
	5	Elementary concept of an electrical machine	5	
	6	Main constructional features of DC machines. Comparison of generator and motor,	6	
3rd	7	Function of the commutator for motoring action.	7	Speedcontrolofdcshuntmotor(i)Armaturecontrol method (ii) Field controlmethod
	8	Function of the commutator for generation action	8	
	9	Factors determining induced emf ,Factors determining the electromagnetic torque	9	
4th	10	Types of dc generation on the basis of excitation.	10	Speedcontrolofdcshuntmotor(i)Armaturecontrol method (ii) Field controlmethod
	11	Significance of back e.m.f.voltage built up in a dc shunt generator,	11	
	12	the relation between back emf and Terminal voltage.	12	
5th	13	Assignment on Torque developmentdue to alignment of two fields & Comparison of generator andmotor	13	Study of dc series motor with starter (to operate the motor on no load for a moment)
	14	Armature Reaction, Commutation methods to improve commutation	14	
	15	Performance of different types of DC motors characteristics of different types of DC motors	15	
6th	26	Speed control of dc shunt motors	16	Study of dc series motor with starter (to operate the motor on no load for a moment)
	17	Speed control of dc series motors	17	

	18	Revision /test	18	
7th	19	Need of starter, 4-point starter dc shunt motor	19	Study of 3 point starter for starting D.C. shunt motor.
	20	Three point dc shunt motor starter, Applications of DC motors, Losses in a DC machine	20	
	21	Determination of losses by Swinburne's test	21	

8th	22	Transformers (single phase) Introduction, Constructional features of a transformer and parts of transformer	22	Study of 3 point starter for starting D.C. shunt motor.
	23	Working principle of a transformer,EMF equation	23	
	24	Transformer on no-load	24	
9th	25	Phasor diagram of Transformer	25	To perform open circuit and short circuit test for determining: (i) equivalent circuit (ii) the regulation and (iii) efficiency of a transformer from the data obtained from open circuit and short circuit test at full load
	26	Transformer – neglecting voltage drop in the windings, Transformer – Ampere turn balance	26	
	27	Transformer – neglecting voltage drop in the windings – Ampere turn balance – its phasor diagram	27	
10th	28	Mutual and leakage fluxes, leakage reactance	28	To perform open circuit and short circuit test for determining: (i) equivalent circuit (ii) the regulation and (iii) efficiency of a transformer from the data obtained from open circuit and short circuit test at full load
	29	Assignment on transformer, Transformer on load, voltage drops, its phasor diagram Equivalent circuit	29	
	30	Revision/test	30	
11th	31	Relation between induced emf and terminal voltage	31	To find the efficiency and regulation of single phase transformer by actually loading it.
	32	regulation of a transformer and its mathematical relation	32	
	33	Losses in a transformer, Open circuit and short circuit test.	33	
12th	34	Calculation of efficiency, condition for maximum efficiency.	34	To find the efficiency and regulation of single phase transformer by actually loading it.
	35	maintenance of Transformer, scheduled Maintenance	35	
	36	Auto transformer construction, Auto transformer saving of copper.	36	
13th	37	Auto transformer working and applications	37	Checking the polarity of the windings of a three phase transformer and connecting the windings in various configurations.
	38	Different types of transformers including dry type transformer	38	
	39	Construction of three phase transformers, accessories of transformers such as Conservator, breather, Buchholz Relay, Tap Changer (off load and on load) (Brief idea)	39	
14th	40	Types of three phase transformer i.e. delta-delta, delta-star, star-delta and star-star	40	Finding the voltage and current relationships of primary and secondary of a three phase transformer under balanced load in various configurations conditions such as • Star-star • Stardelta • Deltastar • Delta - Delta configuringconditions.
	41	Conditions for parallel operation (only conditions are to be studied)	41	
	42	Transformers three phase On load tap changer, power transformer distribution transformer	42	

Lesson Plan

Name of Faculty: Mr. Parmod Kumar

Discipline: Electrical Engineering

Semester: 3rd Semester

Subject: Electrical Engineering Drawing

Lesson Plan Duration: 13-14 Week

Practical Day	Topic
1	Unit 1 : Electrical Symbols used in Electrical installation
2	Drawing sheet1: Design and Drawing of panels/Distribution board using MCB, ELCB main switches and change over switches
3	Drawing sheet2: Design and Drawing of panels/Distribution board using MCB, ELCB main switches and change over switches
4	Unit 2 : DOL starting of 3-phase induction motor
5	3-phase induction motor getting supply from selected feeder
6	Forwarding/reversing of a 3-phase induction motor
7	Two speed control of 3-phase induction motor
8	Sequential operating of two motors using time delay relay
9	Manually generated star delta starter for 3-phase induction motor
10	Automatic star delta starter for 3-phase Induction Motor
11	Draw the wiring diagram of battery and inverter connected to residential load.
12	Draw the wiring diagram of standalone solar light system with battery for a residential house
13	Draw the wiring diagram of solar water heating system.
14	Key diagram of 11kV, 33kV
15	Key diagram of 66kV sub-stations
16	Key diagram of 132 kV sub-stations
17	Draw pipe Earthling.
18	Draw plate Earthling.
19	Bus bar post.
20	Kit Kat Fuse.
21	Pin type insulator (Pin Type 11kV)
22	Pin type insulator (Pin Type 66kV)
23	Rotor of a squirrel cage induction motor
24	Stator of 3 phase Induction motor (Sectional View)
25	Revision
26	Revision
27	Revision
28	Revision

Lesson Plan

Name of the Faculty : **Mrs. Sharmila**
Discipline : **Electrical Engineering**
Semester : **5th Semester**
Subject : **ELECTRICAL POWER –I**

Lesson Plan Duration : **13-14 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1,2	Main resources of energy, Conventional and non-conventional	1.To measure earth resistance with the help of earth resistance tester.	
	3,4	Different types of power stations, thermal, hydro, gas	2. To study different types of line insulators, line support.	
	5	Diesel and nuclear power stations	3.Visit a power generation plant to study its major parts, working and prepare detail report.	
	6,7	Flow diagrams and brief details of their operation, Comparison of the generating stations on the basis of running cost, site, starting, maintenance	4. Visit a 400kV/220kV/132kV transmission line and make list of all components viz line supports, conductors, insulators and other accessories and prepare detail report.	
	8,9	Importance of non-conventional sources of energy in the present scenario, Brief details of solar energy, bio-energy, wind energy	5.Visit to a 66kV/33kV/11kV/415V/230V distribution line make list of all components viz line	
	10	Fixed and running cost, Load estimation, load curves, demand factor	6.To determine experimentally flash over voltage of transformer oil and hence determine the dielectric strength	

	11	Load factor, diversity factor, power factor and their effect on cost of generation, simple problems there on	7.To measure the rating of capacitor bank installed in a sub-station for improving power factor	
	12	Base load and peak load power stations, inter-connection of power stations and its advantages, concept of regional and national grid	8.Study of Indian Electricity rules as per BIS standard related to clearance of overhead transmission and distribution lines	
	13	Layout of transmission system, selection of voltage for H.T and L.T lines, advantages of high voltage for Transmission of power in both AC and DC	9.Draw a layout diagram of 11kV/400V substation installed in the campus and make list of all accessories	
	14	Comparison of different systems: AC versus DC for power transmission	10.To find fault in underground cables by Murray Loop Test/ Varley Loop Test.	
	15	Conductor material and sizes from standard tables	11.Study of data related to conductors of different sizes/types for overhead lines as per IS 398.	
	16	Types of supports, types of insulators	12.Visit to a distribution substation to study layout of major components and types of Feeders, Distributors and Service Mains and prepare detailed report.	
	17	Types of conductors, Selection of insulators, conductors, earth wire and their accessories		
	18,19,	Transposition of conductors and string efficiency of suspension type insulators, Bundle Conductors, Mechanical features of line: Importance of sag, calculation of sag		
	20	Effects of wind and ice related problems; Indian electricity rules pertaining to clearance		
	21	Electrical features of line: Calculation of resistance inductance and capacitance without derivation in a.c. transmission line, voltage regulation, and concept of corona.		
	22	Effects of corona and remedial measures, Transmission Losses, Lay out of HT and LT distribution system		

	23	Constructional feature of distribution lines and their erection, LT feeders and service mains; Simple problems on AC radial distribution system, determination of size of conductor		
	24	Preparation of estimates of HT and LT lines (OH and Cables).		
	25	Constructional features of LT (400 V), HT (II kV) underground cables, advantages and disadvantages of underground system with respect to overhead system		
	26	Calculation of losses in distribution system , Faults in underground cables-determine fault location by Murray Loop Test, Faults in underground cables-determine fault location by Murray Loop Test		
	27	Varley Loop Test		
	28	Varley Loop Test,Brief idea about substations; out door grid sub-station 220/132 KV, 66/33 KV out door substation		
	29	Pole mounted substations and indoor substation, layout of 33/11 and kV/400V distribution substation and various auxiliaries and equipment associated with it		
	30	Concept of power factor, Reasons and disadvantages of low power factor		
	31	Methods for improvement of power factor using capacitor banks, VAR Static Compensator (SVC)		
	32	Revision of Topics already covered		

Lesson Plan

Name of the Faculty : **Ms. Parul Trake**
Discipline : **Electrical Engineering**
Semester : **5th Semester**
Subject : **IECD**
Lesson Plan Duration : **13-15 Week**

Week	Theory		Practical	
	Lecture Day	**Topic (including assignment / test)**	**Practical Day**	**Topic**
	1	Classification of Thyristors	1	To draw V-I characteristics of an SCR.
	2,3,4	Construction, working principle and V-I characteristics of SCR, DIAC, TRIAC	2	To draw V-I characteristics of a TRIAC.
	5	Two transistor analogy of SCR	3	To draw V-I characteristics of a DIAC.
	6	Selection of heat sinks for Thyristors	4	To draw uni-junction transistor characteristics.
	7,8	Methods of triggering a Thyristor and their types, dv/dt and di/dt protection.	5	To observe the output wave shape of an UJT relaxation oscillator.
	9	Commutation of Thyristors.	6	To observe the output waves shape on CRO of Single phase half controlled full wave rectifier.
	10, 11	UJT: Construction, working principles and V-I characteristics. UJT as a relaxation oscillator	7	To observe the output wave shape on CRO of Single phase full controlled full wave rectifier.
	12,13	Applications of SCR, DIACS and TRIACS such as light intensity control, speed control of DC and universal motor, fan regulator ,battery charger etc.	8	Illumination control circuit using SCR/TRIAC and observe the wave shape across load.
	14,15	Single phase half wave controlled rectifier with resistive load and inductive load, concept of freewheeling diode.	9	Speed-control of a DC shunt motor or universal motor using SCR/TRIAC.
	16	Single phase half controlled full wave rectifier.	10	Fan speed regulator using TRIAC.
	17	Single phase full controlled full wave rectifier,Single phase full wave centre tapped rectifier.	11	To study the Construction of battery charger using Thyristor.
	18	Three phase full wave half controlled	12	Testing and Installation of UPS.

		bridge rectifier,Three phase full wave fully controlled bridge rectifier.		
	19,20	Inverters: Introduction, working principle, voltage and current driven, series and parallel inverters and applications.		
	21,22,23	Choppers: Introduction, types of choppers and their working principle and applications.		
	24,25	Dual converters: Introduction, working principle and applications.		
	26, 27	Cyclo-converters: Introduction, types, working principle and applications.		
	28	Concept of electric drive, Advantages of Electric drives.		
	29, 30	DC drives control: Half wave drives, Full wave drives, Chopper drives.		
	31, 32	AC drives control: Phase control, Variable frequency a.c. drives, Constant V/f control		
	33	Cyclo convertors controlled AC drives.		
	34, 35	Concept of Electric Braking for AC Drive.		
	36,37	Uninterrupted Power supply (UPS): Working Principle of Online and off Line UPS.		
	38	Switch mode Power Supply (SMPS): Working Principle and use.		
	39	Power Converter for Electrical Vehicle charging.		
	40	Power Converter for Renewable Energy: solar and wind.		
	41	Revision of Topics already covered		
	42	Class Test		
	43	Problems, Doubts & their solution		
	44	Revision of important topics		
	45	Revision of important topics		