Lesson Plan

Name of the Faculty : **Ms. SHARMILA**

Discipline : **Electrical Engineering**

Semester : **2nd Semester**

Subject : **NON-CONVENTIONAL ENERGY SOURCES**

Lesson Plan Duration : **14-15 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Classification of Energy-primary and secondary energy, Commercial and non- commercial energy, Importance of non conventional energy sources, present scenario, future prospectus, energy scenario in India	1	Visit the website of Ministry of New and Renewable Energy Sources and prepare the Datasheet of Potential, Present and Future Scenario of Renewable energy sources in India.
	2	Sector-wise energy consumption, Principle of conversion of solar radiation into heat, Photo-voltaic cell, electricity, generation	2	. Familiarization with the different components used in solar PV plant (standalone and grid connected system), solar water heating system, solar cooker, solar lighting etc.
	3, 4, 5	Bio-mass conversion technologies-wet and dry processes., Methods for obtaining energy from biomass., Power generation by using gasifiers	3	Calculate power flow of a stand-alone PV system with DC load, AC load and battery.
	6, 7	Wind energy conversion, Windmills, Electricity generation from wind-types of wind mills, Local control, energy storage, Geo-thermal sources	4	To demonstrate "I-V Characteristics and Efficiency of 1kWp Solar PV System" with varying radiation and temperature level.
	8, 9	Ocean thermal electric conversion, Open and closed cycles, Hybrid cycles, Prime movers for geo-thermal energy conversion, Steam Generation,	5	Assemble the components of solar home lighting system & study the system

	10, 11, 12	Electricity generation, Magneto Hydro Dynamic (MHD), Power Generation	6	Assemble the components of solar water heating system system & study the system.
	13, 14	Design and operating principles of a fuel cell	7	Identify Troubleshoot solar PV panel, inverter and solar smart metering system.
	15	Conversion efficiency	8	Identify the specified components of a 1 KW Small Wind Turbine (SWT) system and study them.
	16	Work output and e.m.f of fuel cells,	9	Estimation of wind speed using anemometer.
	17	Applications	10	Study of charging and discharging behavior of a capacitor.
	18	Hydro Energy – Mini & Micro hydro plants	11	Study of charging characteristics of a Ni-Cd battery using solar photovoltaic panel.
	19	Need of energy storage, Different modes of energy storage, Flywheel storage, Super capacitor. Comparison and application.	12	Identify the prime mover /turbines used in different renewable energy sources for power generation and study them.
	20, 21	Superconducting Magnet Energy Storage (SMES) systems, Capacitor, battery,	13	Study the Performance of fuel cell.
	22	Super capacitor. Comparison and application	14	Identify the routine maintenance parts of the micro hydro power plant after watching a video.
	23, 24	Revision of important topics		

Lesson Plan

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

Discipline : **Electrical Engineering**

Semester : **2nd Semester**

Subject : **Electrical Network**

Lesson Plan Duration : **14-15 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Mesh analysis Nodal analysis using voltage and current sources	1	Use voltmeter, ammeter to determine current through the given branch of a electric network by applying mesh analysis.
	2	Superposition theorem Thevenin theorem	2	Use voltmeter, ammeter to determine current through the given branch of a electric network by applying node analysis.
	3, 4	Norton theorem Maximum power transfer theorem	3	Verification of Superposition Theorem. Verification of Thevenin's theorem.
	5,6, 7	Active and passive network Linear and Non Linear network	4	Verification of Norton's Theorems. Verification of Maximum Power transfer Theorem.
	8, 9, 10	Generation of alternating Voltage and current. Difference between ac and dc, Equation of alternating quantity.	5	Measure input current, power, power factor of R-L series circuit and draw the power triangle.
	11,12, 13	AC Terminology: waveform, cycle, frequency, time period, amplitude, instantaneous value, alternation, and their important relations (time period and frequency, angular velocity and frequency etc.)	6	Measure input current, power, power factor of R-C series circuit and draw the power triangle.

	14, 15	Values of alternating voltage and current: Instantaneous value, peak value average value, r.m.s. value, form factor and peak factor	7	Measure input current, power, power factor of R-L-C series circuit and draw the power triangle.
	16	Vector representation of alternating quantities.	8	Use variable frequency supply to create resonance in given series R-L-C circuit or by using variable inductor or variable capacitor.
	17, 18	Concept of phase, phase difference and phasors	9	Estimation of wind speed using anemometer.
	19, 20	Representation of electrical quantities through phasors Addition of two alternating quantities: parallelogram method, component method	10	To determine current, p.f., active, reactive and apparent power in R-C parallel A.C. circuit.
	21, 22	A.C circuit containing pure Resistance, Inductance, Capacitance with the concept of power consumed, phase Angle, inductive and capacitive reactance etc.	11	To determine current, p.f., active, reactive and apparent power for given R-L-C parallel circuit with series connection of resistor and inductor in parallel with capacitor.
	23, 24	AC series circuit: R-L, R-C, R-L-C along with the concept of phasor diagram, phase angle , Impedance, impedance triangle, power, power triangle etc.	12	Use variable frequency supply create resonance in given parallel R-L-C circuit or by using variable inductor or capacitor.
	25, 26	Concept of True power, apparent power and reactive power, Power factor and its significance, disadvantages of low power factor, cause of low power factor, improvement of power factor.	13	Verify the relationship between phase and line values of current and voltages and power in balanced and unbalanced star connected load.
	27, 28, 29	Active and reactive components of current	14	Verify the relationship between phase and line values of current and voltages and power

		Resonance in RLC series circuit, Quality (Q) factor		in balanced and unbalanced delta connected load.
	30	Concept of AC parallel circuit		
	31, 32	Methods of solving parallel AC circuit: vector method, admittance method, symbolic or J-method		
	33	Parallel Resonance, Q-factor		
	34	Comparison of series and parallel resonance., Introduction to transient and Harmonics in A.C. circuits		
	35, 36	Principle of generation of 3 –ø alternating emf., Advantages of Polyphase circuit over single phase circuit, Phase Sequence.		
	37, 38	Types of three phase connections-Star connection and delta connection., Concept of balanced and unbalanced load.		
	39, 40	Relation between phase and line quantities of star and delta connection		

Lesson Plan

Name of the Faculty : **DR. MONIKA AGGARWAL**

Discipline : **Electrical Engineering**

Semester : **4th Semester**

Subject : **UTILIZATION OF ELECTRICAL ENERGY**

Lesson Plan Duration : **12-15 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Introduction, terms used in illumination, laws of illumination		
	2	Indoor and outdoor illumination levels		
	3,4	Discharge lamps		
	5,6	MV and SV lamps		
	7,8	General ideas about time switches, street lighting, flood lighting and decorative lighting		
	9	Advantages and methods of electric heating		
	10,11	Resistance heating		
	12	Induction heating		
	13	Dielectric heating		
	14	Electric welding		
	15,16, 17	Resistance and arc welding		
	18	Electric welding equipment, comparison between A.C. and D.C, Welding.		
	19	Need of electro-deposition		
	20	Laws of electrolysis		
	21,22, 23	Process of electro-deposition - clearing, operation, deposition of metals, polishing and buffing		
	24	Principle of galvanizing and its applications		
	25,26	Principles of anodizing and its applications		
	27	Electroplating of non-conducting materials		
	28,29	Electrical Circuits used in Refrigeration		
	30,31, 32	Air Conditioning and Water Coolers		
	33	Electric Drive and its part		
	34	Advantages of electric drives, Types		

		of electric Drives		
	35	Characteristics of different mechanical loads		
	36	Types of motors used in used in Industrial Drives,		
	37,38	Factors affecting selection of motors, Applications of Electric Drive		
	39	Introduction to Energy efficient drives		
	40	Advantages of electric traction, Concept of diesel electric Traction system		
	41	Systems of Track Electrification (DC & AC system)		
	42	Types of services – urban, sub-urban, and main line and their speed-time curves.		
	43	Electrical block diagram and accessories of an electric locomotive		
	44	Different accessories for track electrification such as overhead centenary wire, conductor rail system, current collector / pentagraph etc.		
	45	Power supply arrangements and types of motors used for electric traction.		
	46	Starting and braking of electric locomotives		
	47	Introduction to EMU and metro railways		

Lesson Plan

Name of the Faculty : **DR. POONAM SAINI**

Discipline : **Electrical Engineering**

Semester : **4th Semester**

Subject : **PLC & MICROCONTROLLERS**

Lesson Plan Duration : **12-15 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Introduction, Definition and advantage	1	Introduction to PLC building blocks and Ladder Programming.
	2	Building blocks of PLC	2	Installation and programming using OpenPLC.
	3	CPU, Memory organization	3	Logic operations in PLC using ladder language e.g. AND, OR, NOT etc.
	4	Input- output modules (discrete and analog)	4	Timers and Counters instructions in PLC using ladder language.
	5	Specialty I/O Modules	5	Sequence control system e.g. in lifting a device for packaging and counting.
	6	Power supply; I/O module selection criteria	6	Traffic Lights System
	7,8	Interfacing different I/O devices with appropriate I/O modules	7	Doorbell Operation
	9	PLC programming Instructions: Relay type instructions	8	Home Automation
	10	Timer instructions: On delay, off delay, retentive	9	Sorting of Objects
	11	Counter instructions: Up, Down, High speed	10	Demonstration and comparison of various 8051/8052 microcontrollers.
	12	Logical instructions	11	Introduction to 8051 programming using C.
	13	Comparison Instructions	12	Testing of GPIO on Micro controller board using C.
	14	Data handling Instructions	13	Interfacing of 7 segment LED with 8051 using C.
	15	Arithmetic instructions	14	Interfacing of 4x3/4x4 Keypad with 8051 using C.
	16	Simple Programming examples using ladder logic: Language based on relay	15	Car Parking with Counter
	17	Timer counter	16	Temperature controlled Fan
	18,19, 20	comparison, arithmetic and data handling instructions	17	RTC based digital clock
	21	PLC Based Applications: Motor	18, 19,	Agriculture Automation using

		sequence control, Motor in forward and reverse direction	20	Humidity, Soil Moisture and Temperature sensors
	22	Star-Delta		
	23	DOL Starters Traffic light control		
	24	Elevator control, Conveyor system		
	25	Stepper motor control, packaging etc.		
	26,27	Stepper motor control, packaging etc.		
	28	Block diagram of 8051		
	29	Function of each block, Pin diagram, function of each pin		
	30	Concept of Internal memory and External memory (RAM and ROM)		
	31	Internal RAM structure, Reset and clock circuit		
	32,33	Various registers and SFRs of 8051.		
	34	Instruction set		
	35	Addressing modes		
	36	Timer operation		
	37	Serial Port operation		
	38	Interrupts: Data Transfer operations		
	39	Input/output operations.		
	40	Design and Interface: keypad interface, 7- segment interface		
	41	LCD		
	42	Stepper motor		
	43	Applications		

Lesson Plan

Name of the Faculty : **Mohd Mohsin**

Discipline : **Electrical Engineering**

Semester : **4th Semester**

Subject : **Estimating and Costing**

Lesson Plan Duration : **14-17 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Purpose of estimating and costing		
	2	Performa for making estimates, preparation of materials schedule,		
	3,4	Costing, price list, preparation of tender document (with 2-3 exercises),		
	5,6	Net price list, market survey, overhead charges, labor charges		
	7,8	Electrical point method and fixed percentage method,		
	9	Contingency, profit.		
	10,11	Types of tenders, tender notice, preparation of tender documents,		
	12,13	Method of opening tender, Quotation format, comparison between tender and quotation		
	114,15	Comparative statement, format comparative statement, Earnest money deposit (EMD)		
	16	Purchase system, order supply, payment of bills.		
	17	Cleat, batten, casing capping and conduit wiring,		
	18	Comparison of different wiring systems,		
	19	Selection and design of wiring schemes for particular situation (domestic and Industrial).		
	20	Selection accessories of wire and cables, wiring		
	21	Use of protective devices i.e. Mcb, Elcb etc.		
	22	Use of wire-gauge and tables (to be prepared/arranged)		
	23,24	Domestic installations; description of various tests to test the wiring		

		installation before commissioning,		
	25	Standard practice as per IS and IE rules.		
	26	Planning of circuits, sub-circuits and position of different accessories,		
	27,28	Electrical layout, preparing estimates including cost as per schedule rate pattern and actual market rate		
	29,30	For single story and multistory building having similar electrical load		
	31	Relevant IE rules and IS standard practices,		
	32,33	Planning, designing and estimation of installation for single phase motors of different		
	34	Electrical circuit diagram, starters,		
	36,37	Preparation of list of materials, estimating and costing exercises on workshop with singe- phase,		
	38	3-phase motor load and the light load (3- phase supply system)		
	39,40	Design electrical installation scheme of factory/ small industrial unit, preparation of material scheduled and detailed estimation		
	41	Classification of outdoor Installation streetlight / public lighting installation		
	42	Street light pole structure, selection of equipment's, source used in street light installation		
	43	Cables recommended types and sizes of cable		
	44	Control of street light installation		
	45	Design, estimation and costing of streetlight, preparation of tenders		
	46,47	Transmission and distribution lines (overhead and underground) planning and designing of lines with different Fixtures, earthling etc. based on unit cost calculation.		
	48	Service line connection estimate for domestic and industrial load (overhead and underground connection) from pole to energy meter		
	49,50	Service line connection estimate for domestic and industrial load (overhead and underground connection) from pole to energy meter		
	51	Types of substation, Substation		

		scheme and components		
	51	Estimate of 11/0.4kV pole mounted substation upto 200kVA rating		
	52	Earthling of substations		

Lesson Plan

Name of the Faculty : **Mohd. Mohsin**

Discipline : **Electrical Engineering**

Semester : **4th Semester**

Subject : **Electrical Machine-II**

Lesson Plan Duration : **12-15 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Introduction,		
	2,3	Construction of 3-Phase Synchronous Machine		
	4	Excitation in Synchronous Machines		
	6	E.M.F. Equation of Alternator		
	7	Generation of E.M.F.		
	8	Armature Winding		
	9,10	Voltage Generate inDistributed Short Pitch Winding		
	11	Armature Reaction and its effects		
	12	Equivalent Circuit and Phasor Diagram of Synchronous Generator		
	13	Voltage Regulation		
	14	Parallel operation		
	15	Procedure of Synchronizing		
	16	Synchronous Power and Torque		
	17	Effect of change in excitation and input power		
	18,19	Synchronous Motor: Working Principle & Equivalent Circuit		
	20	Loading in Synchronous Motor		
	21,22	V-Curve and Inverted V- Curve In Synchronous Motor		
	23	Synchronous Condenser		
	24,25	Starting of Synchronous Motor, Hunting in Synchronous Motor		
	26	Applications of Synchronous Motors		
	27	Revision/Problem solution		
	28	Unit 2: 3-Phase Induction Motors		
	29	Classification of AC Motors		
	30,31	Construction of 3 phase Induction Motor		
	32	Comparison of Squirrel Cage and Wound Rotor		

	33	Production of Rotating Magnetic Field		
	34,35	Principle of operation, slip and its significance		
	36,37	Similarity between Induction Motor and Transformer		
	38	Equivalent Circuit of Induction Motor		
	39	Torque developed in Induction Motor		
	40	Condition for Maximum Starting Torque		
	41,42	Relation between Full load torque, Starting Torque and Maximum Torque.		
	43	Torque Slip Curve		
	44	Power flow diagram of an induction motor		
	45,46	Starting of Induction Motors		
	47,48	Speed Control of Induction Motors		
	49,50	Crawling, Cogging and Skewing		
	51	Applications of 3- phase Induction motor		
	52	Unit 3: Single Phase Motors		
	53	Single phase induction motors; Construction characteristics, specifications and applications		
	54	Nature of field produced in single phase induction motor- double revolving field theory.		
	55	Split phase induction motor		
	56	Alternating current series motor and universal motors, construction, working principle and operation, application.		
	57	Single phase synchronous motor: Reluctance Motor		
	58	Hysteresis Motor		
	59	Special Purpose Machines Linear induction motor		
	60	Stepper motor		

	61	AC Servomotor		
	62	Submersible Motor		

Lesson Plan

Name of the Faculty : **MS. SHARMILA/ Mr. MOHD. MOHSIN**

Discipline : **Electrical Engineering**

Semester : **4th Semester**

Subject : **Programming Skills**

Lesson Plan Duration : **14-15 Week**

Week	Theory		Practical	
	Lecture day	**Topic**	**Practical Day**	**Topic**
	1	Introduction to electrical CAD interface		
	2	Adding a Drawing, Create a new Drawing,		
	3	insert wire,		
	4	Insert a Electrical Component,		
	5	Connecting a component.		
	6	Introduction to MATLAB		
	7	MATLAB Programming – input/output		
	8	types of graphs		
	9	functions, loops, structures, MATLAB Simulink.		
	10	MATLAB Simulink.		
	11	Different program based on matlab		
	12	Graphical Programming using LabVIEW including creation of VIs		
	13	subVIs,		
	14	structures, arrays, clusters, charts and graphs, strings, File I/Os.		

Lesson Plan

Name of the Faculty : **Mohd. Mohsin**

Discipline : **Electrical Engineering**

Semester : **6th Semester**

Subject : **ELECTRICAL ENERGY CONSERVATION AND MANAGEMENT**

Lesson Plan Duration : **14-15 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Basic definitions- Lux, lumen and illumination space to height ratio		
	2, 3	Types of different lamps and their features, Energy efficient practices in lighting		
	4	Tips for energy saving in building - New Building, Existing Building, Laws of Illumination		
	5	Calculation of illumination at different points, Main requirements for proper lighting, Macro level approach at design stage		
	6	Energy Conservation and EC Act 2001 Introduction to energy management, energy conservation, energy efficiency and its need		
	7, 8	Salient features of Energy Conservation Act 2001 & The Energy Conservation (Amendment) Act, 2010 and its importance		
	9, 10	Standards and Labeling - Concept of star rating and its importance, Types of product available for star rating		
	11	**Energy Audit** Types and methodology		
	12	Energy auditing reporting format		
	13	Energy audit instruments		
	14	**Electrical Supply System and Motor** Types of electrical supply system, Single line diagram, Transformer loading		
	15	Tips for energy savings in transformers, Motor Loading		
	16	Variation in efficiency and power factor with loading		
	17	Tips for energy savings in motors, Need for energy efficient motors		
	18	Initial cost versus like cycle cost		

	19	Cost analysis on life cycle basis, Various constructional features of EEMs		
	20	EEM as compared to standard motors		
	21	Understanding Electricity Bill, Tariff structure		
	22, 23	Components of power (kW, kVA and kVAR) and power factor		
	24	Concept of sanctioned load, maximum demand, contract demand and monthly minimum charges (MMC)		
	25	Pumps Introduction to pump and its application		
	26	Efficient pumping system operation		
	27	Energy efficiency in agriculture pumps		
	28	Tips for energy saving in pumps		
	29, 30	Compressed Air System Types of air compressor and its applications		
	31	Leakage test		
	32	Energy saving opportunities in compressors		
	33	Energy Conservation in HVAC and Refrigeration System : Introduction		
	34, 35	Concept of Energy Efficiency Ratio (EER)		
	36	Energy saving opportunities in Heating, Ventilation		
	37	Air-conditioning (HVAC) and Refrigeration Systems		
	38, 39	Thermal Basics: Types of fuels		
	40	Thermal energy		
	41	Energy contents in fuel		
	42, 43	Energy Units and its conversion in terms of metric tonne of oil equivalent (MTOE)		
	44, 45	**General Energy Saving Tips** Lighting System		
	46	Room Air Conditioners		
	47	Refrigerators		
	48	Water Heater		
	49	Computers		
	50, 51	Fans, Heaters, Blowers and Washing Machines		
	52	Water Pumps		
	53	Kitchens		
	54	Transport		
	55	**Energy Conservation Building Code** Haryana ECBC and its salient features including thermal behavior of buildings		

	56	ECBC Guidelines on Building Envelope		
	57	ECBC Prescriptive Requirements for Building Envelope		
	58	ECBC Guidelines on Heating, Ventilation and Air Conditioning		
	59	ECBC Guidelines on Service Hot Water and Pumping		
	60	ECBC Guidelines on Lighting		
	61	ECBC Guidelines on Electrical Power		
	62	ECBC Guidelines on Star Labelling and Minimum Star rating		

Lesson Plan

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

Discipline : **Electrical Engineering**

Semester : **6th Semester**

Subject : **INDUSTRIAL ELECTRONICS AND CONTROL OF DRIVES**

Lesson Plan Duration : **14-15 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Construction and working principles of an SCR	1	To draw V-I characteristics of an SCR
	2	Two transistor analogy and characteristics of SCR	2	To draw V-I characteristics of a TRIAC
	3	SCR specifications and rating	3	To draw V-I characteristics of a DIAC
	4	Construction, working principles and V-I characteristics of DIAC	4	To draw uni-junction transistor characteristics
	5	TRIAC and Quadriac	5	Observe the output wave of an UJT relaxation oscillator
	6	Basic idea about the selection of heat sinks for SCR and TRIACS	6	Observe the wave shape across SCR and load of an illumination control circuit
	7,8	Methods of triggering a Thyristor. Study of triggering circuits	7	Fan speed regulator using TRIAC Quadriac (fabrication of this circuit)
	9	UJT, its Construction, working principles and V-I characteristics, UJT relaxation oscillator	8	Speed-control of a DC shunt motor or universal motor
	10	Commutation of Thyristors (Concept)	9	To observe the output wave shape on CRO of a Single phase half controlled full wave rectifier
	11	Series and parallel operation of Thyristors	10	Single phase controlled rectifier
	12	Applications of SCR	11	Use of Variable Frequency Drive for running a 3 phase Induction motor

	13	TRIACS and Quadriac such as light intensity control		
	14, 15	Speed control of DC and universal motor, fan regulator, battery charger etc.		
	16	dv/dt and di/dt protection of SCR.		
	17,18	Single phase half wave controlled rectifier with resistive load and inductive load, concept of free wheeling diode		
	19	Single phase half controlled full wave rectifier (No mathematical derivation)		
	20	Single phase fully controlled full wave rectifier bridge (Workshops only)		
	21	Single phase full wave centre tapped rectifier (Workshops only)		
	22	Three phase full wave half controlled bridge rectifier (Workshops only)		
	23	Three phase full wave fully controlled bridge rectifier (Workshops only)		
	24	Inverter-introduction, working principles		
	25, 26	Voltage and current driven series and parallel inverters and applications		
	27	Choppers-introduction		
	28,29	Types of choppers and their working principles and applications		
	30,31	Dual converters-introduction, working principles and applications		
	32,33,34	Cyclo-converters- introduction, types, working principles and applications		
	35	DC drives control (Basic Concept)		
	36	Half wave drives		
	37,38	Full wave drives		
	39	Chopper drives		
	40,41	AC drives control		
	42	Phase control		
	43	Variable frequency a.c. drives		
	44	Constant V/F application		
	45,46	Voltage controlled inverter drives		
	47	Constant current inverter drives		
	48,49	Cyclo convertors controlled AC drives		
	50, 51	Slip control AC drives		
	52	UPS		
	53	Stabilizers		
	54	SMPS		
	55	UPS online, off line		
	56	Storage devices (batteries) and their maintenance		

Lesson Plan

Name of the Faculty : **MS. SHARMILA**

Discipline : **Electrical Engineering**

Semester : **6th Semester**

Subject : **ELECTRICAL POWER-II**

Lesson Plan Duration : **14-15 Week**

Week	Theory		Practical	
	Lecture Day	**Topic (including assignment / test)**	**Practical Day**	**Topic**
	1, 2, 3, 4	Common type of faults in both overhead and underground systems, symmetrical/ unsymmetrical faults. Single line to ground fault, double line to ground fault, 3-phase to ground fault open circuit, simple problems relating to fault finding.	1, 2	Testing of the dielectric strength of transformer oil and air
	5, 6, 7	Purpose of protective gear. Difference between switch, isolator and circuit breakers. Function of isolator and circuit breaker. Making capacity and breaking capacity of circuit breaker (only definition)	3, 4, 5	Study of different types of circuit breakers and isolators
	8, 9, 10	Circuit breakers. Types of circuit breakers, bulk and minimum oil circuit breakers, air SF6 circuit breakers	6	Plot the time current characteristics of over current relay
	12, 13, 14	Principles of Arc extinction blast circuit breakers in OCB and ACB, Constructional features of OCB, ACB, and their working, Method of arc extinction	7	Power measurement by using CTs and PTs
	14, 15, 16	MCB, MCCB, ELCB	8, 9, 10	Earthing of different equipment/Main Distribution Board and Energy Meter Box
	17	Fuses; function of fuse. Types of fuses, HV and LV fuses, rewire-able, cartridge, HRC	11, 12	Perform the overload and short circuit test of MCB as per IS specifications
	18, 19, 20, 21, 22	Earthing: purpose of earthing, method of earthing, Equipment earthing, Substation earthing, system earthing as per Indian Electricity rules. Methods of reducing earth resistance.	13	Plot the time-current characteristics of Kit-Kat fuse wire
	22	Introduction - types of relays	14	Taking reading of current on any LT line with clip on meter
	23, 24, 25	Electromagnetic and thermal relays, their construction and working		

	26, 27	Induction type over-current, earth fault relays, instantaneous over current relay		
	28	Directional over-current, differential relays, their functions		
	29	Distance relays, their functions		
	30, 31	Idea of static relays and their applications		
	32, 33	Relays for generator protection		
	34, 35	Relays for transformer, protection including Buchholtz relay protection		
	36, 37, 38	Protection of feeders and bus bars, Over current and earth fault protection.		
	39	Distance protection for transmission system		
	40	Relays for motor protection		
	41, 42, 43	Protection of system against over voltages, causes of over voltages, utility of ground wire		
	44, 45, 46	Lightning arrestors, rod gap, horn gap, metal oxide type		
	47, 48, 49, 50	Transmission Line and substation protection against over-voltages and lightning		
	51, 52	Concept of Tariffs		
	53, 54	Block rate, flat rate, maximum demand and two part tariffs		
	55, 56	Simple problems		

Lesson Plan

Name of the Faculty : **SH. Surender Malik**

Discipline : **Electrical Engineering**

Semester : **6th Semester**

Subject : **EDM**

Lesson Plan Duration : **14-15 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	**UNIT-1.** Introduction to EDM		
	2	Concept /Meaning and its need		
	3	Qualities and functions of entrepreneur and barriers in entrepreneurship		
	4	Sole proprietorship and partnership forms of business organisations		
	5	Schemes of assistance by entrepreneurial support agencies at National, State		
	6	SFC's TCO, KVIB, DIC, Technology Business Incubator (TBI)		
	7	Science and Technology Entrepreneur Parks (STEP).		
	8	District level: NSIC, NRDC, DC:MSME, SIDBI		
	9	NABARD, Commercial Banks		
	10	Assessment of demand and supply in potential areas of growth		
	11	**UNIT-2.** Market Survey and Opportunity Identification		
	12	Scanning of business environment		
	13	Salient features of National and State industrial policies and resultant business opportunities		
	14	Considerations in product selection Types and conduct of market survey		
	15	**Sessional Test-1**		
	16	Identifying business opportunity		
	17	Types of market survey		
	18	Conduct of market survey		
	19	**UNIT-3.** Preliminary project report		
	20	Project report Preparation		
	21	Detailed project report including technical, economic and market feasibility		
	22	Common errors in project report preparations		

	23	Exercises on preparation of project report		
	24	**UNIT-4.** Introduction to Management		
	25	Definitions and importance of management Functions of management: Importance and Process of planning, organising, staffing, directing and controlling		
	26	Types of industrial organizations: Line organization, Line and staff organization, Functional Organisation		
	27	Principles of management (Henri Fayol, F.W. Taylor) Concept and structure of an organisation		
	28	**UNIT-5:** Leadership and Motivation Leadership: Definition and Need		
	29	Qualities and functions of a leader, Motivation: Definitions and characteristics		
	30	**Sessional Test- 2**		
	31	Factors affecting motivation		
	32	Manager Vs leader		
	33	Types of leadership		
	34	Theories of motivation (Maslow, Herzberg, McGregor)		
	35	**UNIT-6:** Management Scope in Different Areas Human Resource Management : Introduction and objective, Introduction to Man power planning, recruitment and selection Introduction to performance appraisal methods		
	36	Material and Store Management: Introduction functions, and objectives,		
	37	ABC Analysis and EOQ		
	38	Marketing and sales: Introduction, importance, and its functions		
	39	Physical distribution, Introduction to promotion mix, Sales promotion		
	40	Financial Management :Introductions, importance and its functions		
	41	Elementary knowledge of income tax, sales tax, excise duty, custom duty and VAT		
	42	**UNIT-7:** Miscellaneous Topics Customer Relation Management (CRM), Definition and need,Types of CRM		
	43	Total Quality Management (TQM) :Statistical process control, Total employees Involvement, Just in time (JIT)		
	44	Intellectual Property Right (IPR)		

		:Introductions, definition and its importance, Infringement related to patents, copy right, trade mark		
	45	**Sessional Test-3**		