Lesson Plan

Name of Faculty- Parveen Kumar

Branch :ElectricalEngineering

Semester : 3rd Semester

Subject: EED

Duration : 13-15 Week

Week	Day	Practical
	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	Revised Sessional Test -1
	26	Revised Sessional Test -2
	27	Revised Sessional Test -3
	28	Revised Sessional Test -3

Name of Faculty :Prankit Gupta
Discipline :Electrical Engineering
Semester :III
Subject :Electrical Machine-I
Lesson Plan Duration :15 weeks
Work Load (Lecture/Practical) Hours :Lecture-03, Practical-04

Week	Theory		Practical	
	Lecturer Day	Topic(including assignment/test)	Practical Day	Topic
1	1	Discuss Learning outcomes of Electrical Machine subject.	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
	2	**Unit1 DC Generators:** Introduction to Electrical Machines: Definition of motor and generator,		
	3	Torque development due to alignment of two fields and the concept of torque angle,	2	File checking and viva
2	4	Generalized theory of electrical machines.	3	Speed control of DC shunt motor (i) Armature control method (ii) Field control method
	5	DC generator: construction, parts, materials and their functions.		
	6	Principle of operation of DC generator, e.m.f. equation of generator,	4	File checking and viva
3	7	armature reaction, commutation	5	Study of DC series motor with starter (to operate the motor on no load for a moment)
	8	Various types of DC generator, Applications of DC generators.		
	9	**Unit2 DC Motors:** Types of DC motors, Principle of operation,	6	File checking and viva
4	10	characteristics, Back e.m.f. and its significance, Voltage equation of DC motor.	7	Determine efficiency of DC motor by Swinburne's Test at (i) rated capacity (ii) half full load
	11	Torque and Speed; Armature torque, Shaft torque, BHP,		
	12	losses, efficiency, Electric Braking. Applications of DC motors.	8	File checking and viva

5	13	DC motor starters: Necessity, three point and four point starters.	9	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
	14	Speed control of DC shunt and series motor: Flux and Armature control.		
	15	Determination of losses by Swinburne's test.	10	File checking and viva
6	16	Brushless DC Motor: Construction and working,	11	To find the efficiency and regulation of single phase transformer by actually loading it.
	17	rating and specifications of DC machines		
	18	First assignment will be given and tentative 1st sessional test/evaluation of sessional marks etc	12	File checking and viva
7	19	Display and analysis of 1st sessional marks	13	Checking the polarity of the windings of a three phase transformer and connecting the windings in various configurations
	20	**Unit3 Single Phase Transformers:** Introduction, Types of transformers: Shell type and core type;		
	21	Construction: Parts and functions, materials used for different parts;	14	File checking and viva
8	22	Principle of operation,	15	Finding the voltage and current relationships of primary and secondary of a three phase transformer under balanced load in various configurations conditions such as (a) Star-star (b) Star-delta (c) Delta-star (d) Delta - Delta configuring conditions.
	23	EMF equation of transformer: Derivation, Voltage transformation ratio.		
	24	Transformer No-load and on-load phasor diagram.	16	File checking and viva
9	25	Mutual and leakage fluxes, Leakage reactance.	17	Evaluation of practicals
	26	Equivalent circuit of transformer: Equivalent resistance and reactance.		
	27	Voltage regulation and Efficiency.	18	Viva
	28	Open circuit and short circuit tests , all day efficiency.	19	Evaluation of practicals
	29	Rating and Specifications of single phase transformer.		

10	30	**Unit4 Three Phase Transformers:** Construction of three phase transformers accessories of transformers such as Conservator, breather, Buchholtz Relay, Tap Changer (off load and on load)	20	Viva
11	31	Second assignment will be given and tentative 2nd sessional test/evaluation of sessional marks etc	21	Evaluation of practicals
	32	Display and analysis of 2nd sessional marks		
	33	Types of three phase transformer i.e. delta-delta, delta-star, star-delta and star-star.	22	Viva
12	34	Need of parallel operation of three phase transformer, Conditions for parallel operation. Polarity tests.	23	Revision of practicals
	35	Criteria for selection of distribution transformer, and power transformer,Amorphous Core type Distribution Transformer.		
	36	Cooling of transformer. Specifications of three-phase distribution transformers.	24	Quiz based assesment
13	37	**Unit5:** Single phase and three phase auto transformers: Construction, working and applications.	25	Revision of practicals
	38	Instrument Transformers: Construction, working and applications of Current transformer and Potential transformer.		
	39	Isolation transformer: Constructional Features and applications.	26	Quiz based assesment
14	40	Single phase welding transformer: constructional features and applications.	27	Revision of practicals
	41	'K' factor of transformers: overheating due to non-linear loads and harmonics.		
	42	3rd sessional	28	Quiz based assesment
15	43	Evaluation and display of 3rd sessional marks	29	viva voce/ preparation of practical sessional marks
	44	Remedial will be taken if any shortcomings found		
	45	Remedial will be taken if any shortcomings found	30	viva voce/ preparation of practical sessional marks

Lesson Plan

Name of the Faculty : **Mr. Narsingh Parmar**
Discipline : **Electrical Engineering**
Semester : **3rd Semester**
Subject : **ELECTRICAL ENGINEERING MATERIALS**

Lesson Plan Duration : **13-15 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	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	in fabrications of electrical machines such as motors		
	26	ors, transformers etc		
	27	Class Test		
	28,29	Problems, Doubts & their solution		
	30	Revision of important topics		

Lesson Plan

Name of the Faculty : **Mr. Narsingh Parmar**

Discipline : **Electrical Engineering**

Semester : **3th Semester**

Subject : **Analog and Digital Electronics**

Lesson Plan Duration : **13-15 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1,2	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:
	3,4	Intrinsic and extrinsic semiconductor	2	Half-wave rectifier circuit using one diode, Full-wave rectifier circuit using two diodes
	5,6	P and N type semiconductor and their conductivity	3	Observe the output of waveform of Bridge-rectifier circuit using four diodes.
	7, 8	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
	9,10	PN junction diode, mechanism of current flow in PN junction	5	To study weighing machine using load cell
	11,12	Forward and reverse biased PN junction, potential barrier	6	Plotting of V-I characteristics of a FET
	13	Drift and diffusion currents, depletion layer	7	Basic logic operations of AND, OR, NOT gates
	14, 15	V-I characteristics of diodes	8	Verification of truth tables for NAND, NOR and Exclusive OR (EX-OR) and Exclusive NOR (EX-NOR) gates
	16, 17	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.
	18, 19, 18	Concept of filters,	10	To design a half adder using XOR and NAND gates and

				verification of its operations.
	20	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
	21	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)
	22, 23, 24	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
	25, 26	Construction, operation and characteristics of FETs, FET as an Amplifier		
	27, 28	Construction, operation and characteristics of a MOSFET, Comparison of JFET, MOSFET and BJT		
	29, 30	Distinction between analog and digital signal. Decimal, Binary, octal and hexadecimal number System		
	31, 32, 33	Conversion from decimal and hexadecimal to binary and vice-versa, Binary addition and subtraction		
	34, 35	Sequential Circuits such as Half adder, Full adder		
	36	Mux, De-Mux, Encoder and Decoder		
	37, 38	Combinational Circuits like Latch, Flip Flops, shift registers and Counters		
	39, 40	A/D and D/A Converters and its Applications		
	41	Revision of important topics		

Lesson Plan

Name of the Faculty : **Mr. Ashish Kumar Yadav**

Discipline : **Electrical Engineering**

Semester : **3th Semester**

Subject : **ELECTRICAL MEASUREMENT & INSTRUMENTATION**

Lesson Plan Duration : **13-15 Week**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Significance of measurement, errors in measurement, types of error	1	Use of analog and digital multimeter for measurement of voltage, current (A.C/D.C) and resistance
	2	Classification of measuring instruments: indicating, recording, and integrating instruments; Essential requirements of an indicating instruments	2	Use of LCR meter for measuring inductance, capacitance and resistance.
	3, 4	Concept of Ammeter, voltmeter, ammeter construction, working principle	3	To measure power, power factor in a single-phase circuit, using wattmeter and power factor meter and to verify results with calculations.
	5	Merits, demerits and comparison of moving coil, moving iron meter, rectifier type	4	Measurement of power and power factor of a three-phase balanced load by two wattmeter method.
	6,7	Extension of range and calibration of voltmeter and ammeter, Errors and compensation	5	Measurement of voltage and frequency of a sinusoidal signal using CRO and draw wave shape of signal.
	8	Construction, working principle, merits and demerits of dynamometer wattmeter	6	Measurement of pressure by using LVDT
	9, 10	Digital wattmeter, Active and reactive power measurement by , two and three wattmeter method.	7	Measurement of temperature by using Thermistor/Thermal Imager.
	11, 12	Effect of Power factor on wattmeter reading in two wattmeter method, Maximum Demand indicator	8	To record all electrical quantities from the meters installed in the institution premises
	13, 14, 15	Construction, working principle, merits and demerits of single-phase and three-phase energy meters (Induction type), Errors	9	To measure Energy at different Loads using Single Phase Digital Energy meter.

		and their compensations		
	16	Calibration of energy meter using direct loading	10	Calibration of single phase and three-phase energy meter.
	17	Digital energy meter (diagram, construction and application)		
	18, 19, 20	Construction, working principle and application of Meggar, Earth tester (analog and digital), multi-meter (analog and digital), Frequency meter (dynamometer type), single power factor meter (Electrodynamometer type)		
	21, 22	Working principle of synchroscope and phase sequence indicator, tong tester (Clamp-on meter)		
	23	Study of LCR meters and their applications		
	24	Construction, working and applications of CT and PT		
	25, 26	Cathode Ray Oscilloscope: Block diagram, working principle of CRO and its various controls		
	27	Digital Storage Oscilloscope (DSO), Introduction, Types of Transducers		
	28, 29	Construction and principle of resistive transducer-Potentiometer–variac and strain gauges -No derivation		
	30, 31	Only definition and formula for gauge factor, Types of strain gauges like unbonded, bonded and semiconductor		
	32, 33	Construction and principle of Inductive transducers-L.V.D.T. and R.V.D.T, their applications.		
	34.35	Construction, principle and applications of transducers – Piezoelectric transducer, photo-conductive cells, photo voltaic cells.		
	36, 37, 38	Temperature measurement - Construction and Working of RTD, Thermistor and Thermocouple, radiation pyrometer, technical specifications and ranges. Thermal Imager Camera (Concept)		
	39, 40	Pressure measurement –		

		Construction and working of bourdon tube, bellow diaphragm strain gauge. Measurement of pH Level.		
	41	Revision of important topics		