Lesson Plan

Name of Faculty : MANITA
Discipline : ECE
Semester : 1st Year
Subject : FEEE
Lesson Plan Duration : 30 weeks
Work load (Lecture /Practical) per week (in hours): Lectures-02, Practical-02

Week	Theory		Practical	
	Lecture Day	Topic /Assignment	Practical Day	Topic
1	1	Overview of DC Circuits	1	Operation and use of measuring instruments viz voltmeter, ammeter, CRO, Wattmeter, multi-meter and other accessories
	2	Simple problems on series and parallel combination of resistors		
2	3	Simple problems on series and parallel combination of Capacitors	2	Measurement of resistance of an ammeter and a voltmeter
	4	KCL & KVL		
3	5	Star Delta Connections And Conversion	3	Verification of following Theorems:- Thevenin's theorem
	6	Thevenin's theorem, Norton's theorem		
4	7	Superposition nodal analysis, Mesh analysis	4	Observation of change in resistance of a bulb in hot and cold conditions, using voltmeter and ammeter
	8	Maximum Power Transfer Theorem		
5	9	Concept of voltage source, Symbol and graphical representation characteristics of ideal and practical sources	5	Verification of Krichhoff's Current and Voltage Laws in a dc circuit
	10	Concept of current sources, symbol, characteristics and graphical representation of ideal and practical current sources		
6	11	Review of basic atomic structure and energy levels, concept of insulators, conductors and semi conductors , atomic structure of Germanium (Ge) and Silicon (Si),	6	Verification of Krichhoff's Current and Voltage Laws in a dc circuit
	12	Concept of intrinsic and extrinsic semi conductor, process of doping		
7	13	Energy level diagram of conductors, insulators and semi conductors , minority and majority charge carriers	7	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
	14	P and N type semiconductors and their conductivity effect of temperature on conductivity of intrinsic SC		
8	15	PN junction diode, mechanism of current flow in PN junction, forward and reverse biased PN junction, potential	8	Charging and testing of a lead - acid storage battery

		barrier,		
	16	drift and diffusion currents, depletion layer concept of junction capacitance in forward and reverse biased condition		
)	17	V-I characteristics, static and dynamic resistance and their value calculation from the characteristics	9	Measurement of power and power factor in a single phase R-.L-.C. circuit and calculation of active and reactive powers in the circuit
	18	Application of diode as half-wave, full wave and bridge rectifiers		
10	19	Peak Inverse Voltage, rectification efficiencies and ripple factor calculations,	10	Measurement of power and power factor in a single phase R-.L-.C. circuit and calculation of active and reactive powers in the circuit
	20	shunt capacitor filter, series inductor filter, LC and π filters		
11	21	Types of diodes, characteristics and applications of Zener diodes	11	Plotting of V-I characteristics of a PN junction diode
	22	Zener and avalanche breakdown		
12	23	Concept of electro-magnetic field produced by flow of electric current, magnetic circuit,	12	Plotting of V-I characteristics of a Zener diode
	24	concept of magneto-motive force (MMF), flux, reluctance, permeability, analogy between electric and magnetic circuit		
13	25	Faraday's laws of electro-magnetic induction, principles of self and mutual induction, self and mutually induced e.m.f, simple numerical problems	13	Observe the output of waveform using Half-wave rectifier circuit using one diode
	26	Concept of current growth, decay and time constant in an inductive (RL) circuit		
14	27	Energy stored in an inductor, series and parallel combination of inductors	14	Observe the output of waveform using Full-wave rectifier circuit using two diodes
	28	Basic idea of primary and secondary cells Construction, working principle and applications of Lead-Acid		
15	29	Nickel-Cadmium and Silver-Oxide batteries	15	Observe the output of waveform using Bridge-rectifier circuit using four diodes
	30	Charging methods used for lead-acid battery (accumulator)		

		Care and maintenance of lead-acid battery		
16	31	Series and parallel connections of batteries General idea of solar cells	16	Plotting of the wave shape of full wave rectifier with Shunt capacitor filter
	32	solar panels and their applications Introduction to maintenance free batteries		
17	33	Concept of alternating quantities Difference between ac and dc	17	Plotting of the wave shape of full wave rectifier with Series inductor filter
	34	Concepts of: cycle, frequency, time period, amplitude, instantaneous value, average value, r.m.s. value, maximum value		
18	35	form factor and peak factor. Representation of sinusoidal quantities by phasor diagrams	18	Plotting of input and output characteristics and calculation of parameters of transistors in CE configuration
	36	Equation of sinusoidal wave form for an alternating quantity and its derivation		
19	37	Effect of alternating voltage applied to a pure resistance, pure inductance and pure capacitance	19	Plotting of input and output characteristics and calculation of parameters of transistors in CE configuration
	38	Concept of inductive and capacitive reactance, Introduction to series and parallel resonance and its conditions		
20	39	Alternating voltage applied to resistance inductance in series Alternating voltage applied to resistance and capacitance in series	20	Plotting of input and output characteristics and calculation of parameters of transistors in CB configuration
	40	Power in pure resistance, inductance and capacitance, power in combined RLC circuits. Power factor		
21	41	active and reactive power and their significance, definition and significance of power factor.	21	Plotting of input and output characteristics and calculation of parameters of transistors in CB configuration
	42	Definition of conductance, susceptance, admittance, impedance and their units		
22	43	Concept of a bipolar transistor,	22	Plotting of V-I characteristics of

		its structure, PNP and NPN transistors, their symbols		a FET.
	44	mechanism of current flow; Current relations in a transistor; concept of leakage current;		
23	45	CB, CE, CC configurations of a transistor; Input and output characteristics in CB and CE configurations; input and output dynamic resistance in CB and CE configurations;	23	Plotting of V-I characteristics of a FET.
	46	Current amplification factors. Comparison of CB, CE and CC Configurations;		
24	47	Transistor as an amplifier in CE Configuration; concept of DC load line	24	To determine the efficiency of single phase Transformer
	48	Calculation of current gain and voltage gain using DC load line		
25	49	Concept of transistor biasing and selection of operating point, Need for stabilization of operating point	25	To determine the efficiency of single phase Transformer
	50	Different types of biasing circuits		
26	51	Construction, operation and characteristics of FETs and their applications.	26	Revision
	52	Construction, operation and characteristics of a MOSFET in depletion		
27	53	Construction, operation of enhancement modes and its applications	27	Revision
	54	CMOS - advantages and applications , Comparison of JFET, MOSFET and BJT		
28	55	Transformers : Principal of operation, construction detail of single phase transformer	28	Revision
	56	Turns ratio , efficiency, loses in a transformer		
29	57	DC machine : principal of	29	Revision

		operation , Construction of DC motor and generator		
	58	Characteristics of different types of DC machines , Starter		
30	59	AC machines : Principal and working of synchronous machines	30	Revision
	60	Single phase induction motor		