

LESSON PLAN

NAME: MEENAKSHI
DESIGNATION: LECTURER
SUBJECT: FEEE
Duration : 40 weeks (30/7/2018 to 30/04/2019)
Work Load : 2 Lectures and 1 Practical per week

WEEK	LECTUR E DAY	TOPIC (including test & 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 and capacitors with their wattage consideration	2	--do---
2	1	Application of Kirchhoff's current law and Kirchhoff's voltage law to simple circuits. Star – Delta connections and their conversion.	1	--do---
	2	DC Circuit Theorems	2	--do---
3	1	Thevenin's theorem, Norton's theorem, application of network theorems in solving D.C.	1	Measurement of resistance of an ammeter and a voltmeter
	2	. Superposition nodal analysis, Mesh analysis, Maximum Power Transfer Theorem.	2	--do---
4	1	circuit problems	1	--do---
	2	Concept of voltage source, symbol and graphical representation characteristics of ideal and practical sources.	2	--do---
5	1	Concept of current sources, symbol, characteristics and graphical representation of ideal and practical current sources	1	Verification of following Theorems:- a. Thevenin's theorem, b. Norton's theorem
	2	Review of basic atomic structure and energy levels, concept of insulators, conductors and semi conductors, atomic structure of Germanium (Ge) and Silicon (Si), covalent bonds	2	--do---
6	1	Concept of intrinsic and extrinsic semi conductor, process of doping.	1	--do---
	2	Energy level diagram of conductors, insulators and semi conductors; minority and majority charge carriers	2	--do---
7	1	P and N type semiconductors and their conductivity, effect of temperature on conductivity of intrinsic semi conductors	1	Observation of change in resistance of a bulb in hot and cold conditions, using voltmeter and ammeter
	2	Revision of semiconductor physics	2	--do---

		and assignment work		
8	1	PN junction diode, mechanism of current flow in PN junction,	1	--do---
	2	forward and reverse biased PN junction, potential barrier	2	--do---
9	1	drift and diffusion currents, depletion layer	1	Verification of Krichhoff's Current and Voltage Laws in a dc circuit
	2	concept of junction capacitance in forward and reverse biased condition	2	--do---
10	1	V-I characteristics, static and dynamic resistance and their value calculation from the characteristics	1	--do---
	2	Application of diode as half-wave, full wave and bridge rectifiers	2	--do---
11	1	Peak Inverse Voltage, rectification efficiencies and ripple factor calculations	1	Charging and testing of a lead - acid storage battery
	2	Shunt capacitor filter, series inductor filter, LC and π filters.	2	--do---
12	1	Types of diodes, characteristics and applications of Zener diodes. Zener and avalanche breakdown	1	--do---
	2	Concept of electro-magnetic field produced by flow of electric current, magnetic circuit	2	--do---
13	1	concept of magneto-motive force (MMF), flux, reluctance, permeability	1	Plotting of V-I characteristics of a PN junction diode & Zener diode
	2	analogy between electric and magnetic circuit, Faraday's laws of electro-magnetic induction,	2	--do---
14	1	principles of self and mutual induction	1	--do---
	2	self and mutually induced e.m.f, simple numerical problems.	2	--do---
15	1	Concept of current growth, decay and time constant in an inductive (RL) circuit	1	Observe the output of waveform using a. Half-wave rectifier circuit using one diode b. Full-wave rectifier circuit using two diodes c. Bridge-rectifier circuit using four diodes
	2	Energy stored in an inductor, series and parallel combination of inductors	2	--do---
16	1	Basic idea of primary and secondary cells	1	--do---
	2	Construction, working principle and applications of Lead-Acid, Nickel-Cadmium and Silver-Oxide batteries	2	--do---
17	1	Charging methods used for lead-acid battery (accumulator), Care and maintenance of lead-acid battery	1	Plotting of the wave shape of full wave rectifier with a. Shunt capacitor filter

				b. Series inductor filter
	2	Series and parallel connections of batteries, General idea of solar cells, solar panels and their applications Introduction to maintenance free batteries	2	--do---
18	1	Concept of alternating quantities Difference between ac and dc	1	--do---
	2	Concepts of: cycle, frequency, time period, amplitude, instantaneous value	2	--do---
19	1	average value, r.m.s. value, maximum value, form factor and peak factor. Representation of sinusoidal quantities by phasor diagrams.	1	Plotting of input and output characteristics and calculation of parameters of transistors in CE configuration
	2	Equation of sinusoidal wave form for an alternating quantity and its derivation	2	--do---
20	1	Effect of alternating voltage applied to a pure resistance, pure inductance and pure capacitance	1	--do---
	2	Concept of inductive and capacitive reactance Alternating voltage applied to resistance and inductance in series	2	--do---
21	1	Alternating voltage applied to resistance and capacitance in series	1	Plotting of input and output characteristics and calculation of parameters of transistors in CB configuration
	2	Introduction to series and parallel resonance and its conditions	2	--do---
22	1	Power in pure resistance, inductance and capacitance	1	--do---
	2	power in combined RLC circuits. Power factor, active and reactive power and their significance, definition and significance of power factor.	2	--do---
23	1	Definition of conductance, susceptance, admittance, impedance and their units	1	Plotting of V-I characteristics of a FET.
	2	Concept of a bipolar transistor, its structure, PNP and NPN transistors, their symbols and mechanism of current flow;	2	--do---
24	1	Current relations in a transistor; concept of leakage current	1	--do---
	2	CE, CC configurations of a transistor; Input and output characteristics in CB and CE configurations;	2	--do---
25	1	input and output dynamic resistance in CB and CE configurations; Current amplification factors	1	To determine the efficiency of single phase Transformer
	2	Comparison of CB, CE and CC Configurations	2	--do---
26	1	Transistor as an amplifier in CE Configuration	1	--do---

	2	concept of DC load line and calculation of current gain and voltage gain using DC load line.	2	--do---
27	1	Concept of transistor biasing and selection of operating point	1	revision
	2	Need for stabilization of operating point. Different types of biasing circuits.	2	revision
28	1	Revision of transistor configuration	1	revision
	2	Assignment on VI chara of CE & CB configuration	2	revision
29	1	Construction, operation and characteristics of FETs and their applications. Construction, operation and characteristics of a MOSFET in depletion and enhancement modes and its applications	1	revision
	2	CMOS - advantages and applications	2	revision
30	1	Comparison of JFET, MOSFET and BJT	1	revision
	2	Transformers : Principal of operation, construction detail of single phase transformer	2	revision
31	1	turns ratio , efficiency, losses in a transformer.	1	revision
	2	DC machine : principal of operation, construction of DC motor and generator	2	revision
32	1	Characteristics of different types of DC machines , Starter	1	revision
	2	AC machines : Principal and working of synchronous machines	2	revision
33	1	AC, single phase induction	1	revision
	2	Revision of ch 6	2	revision
34	1	Revision of ch7	1	revision
	2	Quiz based on Ch 6 and 7	2	revision
35	1	Test of ch 8	1	revision
	2	Test of ch 9	2	revision
36	1	Revision of ch 8	1	revision
	2	Revision of ch9	2	revision
37	1	Test of ch 10	1	revision
	2	Test of ch 11	2	revision
38	1	Revision of ch 10	1	revision
	2	Revision of ch11	2	revision
39	1	Test of ch 12	1	revision
	2	Test of ch 13	2	revision
40	1	Revision of ch 12	1	revision
	2	Revision of ch13	2	revision