Lesson Plan

Name of the Faculty **:** Sarbjeet Singh (Theory) and Mehak Saini (Practical)

Discipline **:** Electronics and Communication Engineering

Semester **:** 2nd

Subject **:** Basic Electrical Engineering (ES-101A)

Basic Electrical Engineering Lab (ES-103LA)

Lesson Plan Duration **:** 15 weeks (from January, 2020 to April, 2020)

****Work Load (Lecture / Practical) per week (in hours)** **:** Lectures-04, Practical-02

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
1st	1st	Introduction to the subject	1st	To verify KVL and KCL.
	2nd	Ohm's Law, junction & node		
	3rd	circuit elements classification: Linear & nonlinear, active & passive, lumped & distributed, unilateral & bilateral with examples		
	4th	Kirchhoff's current Law and Kirchhoff's voltage law		
2nd	5th	Loop analysis of resistive circuit in the context of dc voltages & currents	2nd	To verify Superposition theorem on a linear circuit with at least one voltage & one current source.
	6th	Concept of super mesh		
	7th	Node-voltage analysis of resistive circuit in the context of dc voltages & currents		
	8th	Concept of super node		
3rd	9th	Star-Delta transformation	3rd	To verify Thevenin's Theorem on a linear circuit with at least one voltage & one current source
	10th	Relevant D.C. circuit analytical problems for quantitative analysis		
	11th	Superposition thorem for DC network		
	12th	Thevenin's theorem for DC network		
4th	13th	Norton's theorem for DC network	4th	To verify Norton's Theorem on a linear circuit with at least one voltage & one current source.
	14th	Maximum power transfer theorem		
	15th	Relevant D.C. circuit analytical problems for quantitative analysis based on network theorems		
	16th	Assignment-1/ Class Test		

5th	17th	Mathematical representation of various wave functions	5th	Viva Voce-1
	18th	Sinusoidal periodic signal, instantaneous & peak values of Sinusoidal signal		
	19th	polar & rectangular form representation of impedances & phasor quantities		
	20th	Addition & subtraction of two or more phasor sinusoidal quantities using component resolution method		
6th	21st	RMS & average values of clipped, clamped, half wave rectified waveforms	6th	To study frequency response of a series R-L-C circuit on CRO and determine resonant frequency& Q-factor for various Values of R, L, and C.
	22nd	RMS & average values of full wave rectified sinusoidal periodic waveforms		
	23rd	Generation of alternating emf (dynamo)		
	24th	Relevant analytical problems for quantitative analysis		
7th	25th	Behavior of various components fed by A.C. source	7th	To study frequency response of a parallel R-L-C circuit on CRO and determine resonant frequency & Q - Factor for various values of R, L, and C.
	26th	Steady state response of pure R, L and C		
	27th	Steady state response of RL, RC, RLC		
	28th	P.F active, reactive & apparent power		
8th	29th	Frequency response of Series RLC circuit	8th	To perform O.C. and S.C. tests on a single phase transformer.
	30th	Frequency response of Parallel RLC circuit		
	31st	Relevant A.C. circuit solutions using 'j-omega' operator method.		
	32nd	Assignment-2/ Class Test		
9th	33rd	Necessity, advantage and mode of generation of 3 phase supply	9th	To perform direct load test on a single phase transformer and plot efficiency v/s load characteristic.
	34th	Phase and line voltages, currents, power		
	35th	Measurement of 3-phase power by two wattmeter method for various types of star & delta connected balanced loads		
	36th	Phase sequence significance		
10th	37th	Concept of magnetic circuits, Relation between magnetic flux, m.m.f. and reluctance	10th	Viva Voce-2
	38th	Hysteresis & Eddy current losses & their minimization		
	39th	Principle, construction & emf Equation in case of transformer		
	40th	Phasor diagram for ideal case and at no load, and on load conditions		

11th	41st	Actual transformer at resistive, inductive & capacitive loads with phasor diagrams	11th	To perform speed controls of DC shunt motor.
	42nd	Losses, Efficiency, Regulation		
	43rd	OC& SC test, Equivalent circuit		
	44th	concept of auto transformer		
12th	45th	Assignment-3/ Class Test	12th	To perform starting & reversal of direction of a three phase induction motor.
	46th	Principle, general construction & working of DC machines		
	47th	Split ring/commutator working in DC generator & motor		
	48th	speed control of dc shunt motor		
13th	49th	Generation of rotating magnetic fields	13th	Measurement of power in a 3 phase balanced system by two watt meter method.
	50th	Construction and working of a three-phase induction motor		
	51st	Significance of torque-slip characteristic		
	52nd	Basics of Single-phase induction motor		
14th	53rd	capacitor start capacitor run Single-phase induction motor working	14th	To calibrate a single phase energy meter.
	54th	Basic construction and working of synchronous generator		
	55th	Basic construction and working of synchronous motor		
	56th	Switch Fuse Unit (SFU), MCB		
15th	57th	ELCB, MCCB	15th	Viva Voce-3
	58th	Types of Wires and Cables		
	59th	Earthing		
	60th	Assignment-4/ Class Test		

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