"PVC" NSSK Govt. Polytechnic Bilaspur at Kalol
Lecture Planning (Theory)

Branch : **Electrical Engg.** Semester : **3rd**

Subject : **Electrical Circuits** Session: **Aug 25 - Dec 25**

Teacher : **Ashwani Kumar** Cass Room : **LT8**

Sr. No.	No. of Lectures	Chapter/ Unit Description	Detail of Contents	Reference Resources	Rem
1.	1-11	Single Phase A.C Series Circuits	Generation of alternating voltage, Phasor representation of sinusoidal quantities R, L, C circuit elements its voltage and current response. R-L, R-C, R-L-C combination of A.C series circuit, impedance, reactance, impedance triangle, Power factor, active power, reactive power, apparent power, power triangle and vector diagram, Resonance, Bandwidth, Quality factor and voltage magnification in series R-L, R-C, RL-C circuit.	R1,R2,R3	
2.	12-23	Single Phase A.C Parallel Circuits	R-L, R-C and R-L-C parallel combination of A.C. circuits. Impedance, reactance, phasor diagram, impedance triangle. R-L, R-C, R-L-C parallel A.C. circuits power factor, active power, apparent power, reactive power, power triangle Resonance in parallel R-L, R-C, R-L-C circuit, Bandwidth, Quality factor and voltage magnification.	-do-	
3.	24-38	Three Phase Circuits	Phasor and complex representation of three phase supply, Phase sequence and polarity Types of three-phase connections, Phase .and line quantities in three phase star and delta system, Balanced and unbalanced load, neutral shift in unbalanced load. Three phase power, active, reactive and apparent power in star and delta system.	-do-	
4.	39-50	Network Reduction and Principles of Circuit Analysis	Source transformation, Star/delta and delta/star transformation Mesh Analysis, Node Analysis.	-do-	
5.	51-65	Network Theorems	Superposition theorem, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem, Reciprocity theorem, Duality in electric circuits.	-do-	

01-08-25

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Reference Resource:

R1: Ashfaq Husain, Networks & Systems, Khanna Book Publishing, New Delhi.

R2: Gupta, B.R; Fundamentals of Electrical Network, S.Chand and Co., New Delhi.

R3: B. L. Theraja, A Text Book of Electrical Technology, S. Chand & Co. Ramnagar,New Delhi.

"PVC" NSSK Govt. Polytechnic Bilaspur at Kalol
Practical Planning & Coverage

Branch : **Electrical Engg.**

Subject : **Electrical Circuits Lab**

Teacher : Lalit **Kumar**

Semester: 3rd

Session: **Aug 25 - Dec 25**

Laboratory: **Basic Electrical Lab**

Pract. No.	Description of Practical	Reference for Procedure/ Writeup	Likely Dates	Actual Dates	Sign
1	Use dual trace oscilloscope to determine A.C voltage and current response in given R, L, C circuit.	Lab Manual			
2.	Use voltmeter, ammeter, wattmeter to determine active, reactive and apparent power consumed in given R-L series circuit. Draw phasor diagram.	Lab Manual			
3.	Use voltmeter, ammeter to determine active, reactive and apparent power consumed in given R-C series circuit. Draw phasor diagram.	Lab Manual			
4.	Use voltmeter, ammeter, wattmeter to determine active, reactive and apparent power consumed in given R-L- C series circuit. Draw phasor diagram	Lab Manual			
5	Use variable frequency supply to create resonance in given series R-L-C circuit or by using variable inductor or variable capacitor	Lab Manual			
6	Use voltmeter, ammeter, wattmeter, p.f meter to determine line and phase quantities of voltage and current for balanced three phase star and delta connected load and calculate active, reactive, and apparent power. Draw phasor diagram.	Lab Manual			
7	Use voltmeter, ammeter to determine current through the given branch of a electric network by applying mesh analysis.	Lab Manual			
8	Use voltmeter, ammeter to determine current through the given branch of a electric network by applying node analysis.	Lab Manual			
9	Use voltmeter, ammeter to determine current through the given branch and voltage across the given element of circuit by applying superposition theorem.	Lab Manual			

10	Use voltmeter, ammeter to determine equivalent circuit parameter in a given circuit by applying Thevenin's Theorem	Lab Manual		
11	Use voltmeter, ammeter to determine equivalent circuit parameter in a given circuit by applying Norton's Theorem	Lab Manual		
12	Use voltmeter, ammeter to determine load resistance for maximum power transfer for a given circuit by applying maximum power transfer theorem.	Lab Manual		

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