

## LESSON PLAN OF CIRCUIT AND NETWORK THEORY FOR SEM-2021-22

Discipline- Electrical Engg.	Semester-3 <sup>rd</sup>	Name of the teaching faculty- S. S Sahu
Subject- Circuit and Network Theory	No of days/week class allotted-5	No of weeks-15
Week	Class day	Theory topic
1	1 <sup>st</sup>	<b>Magnetic circuit</b> introduction
	2 <sup>nd</sup>	Magnetizing force, Magnetic intensity
	3 <sup>rd</sup>	MMF, Flux and their relation
	4 <sup>th</sup>	Analogy between magnetic circuit and electric circuit
	5 <sup>th</sup>	Numerical on magnetic circuit
2	1 <sup>st</sup>	Series and parallel magnetic circuit and problem solve
	2 <sup>nd</sup>	Complete numerical on magnetic circuit
	3 <sup>rd</sup>	BH curve and hysteresis loop
	4 <sup>th</sup>	<b>Coupled Circuit</b>
	5 <sup>th</sup>	Self-Inductance and mutual Inductance
3	1 <sup>st</sup>	Coefficient of coupling
	2 <sup>nd</sup>	Series connection of coupled coils
	3 <sup>rd</sup>	Modeling of coupled circuit
	4 <sup>th</sup>	Dot convention
	5 <sup>th</sup>	Parallel connection of coupled circuit
4	1 <sup>st</sup>	Electrical equivalents of magnetic coupled circuit
	2 <sup>nd</sup>	Solve numerical
	3 <sup>rd</sup>	<b>Circuit elements and Analysis</b>
	4 <sup>th</sup>	Active passive Unilateral Bilateral linear and non linear
	5 <sup>th</sup>	Mesh analysis, Mesh equations
5	1 <sup>st</sup>	Solve numerical on Mesh analysis
	2 <sup>nd</sup>	Super mesh analysis and solve problems
	3 <sup>rd</sup>	Nodal analysis, Nodal Equations by inspection
	4 <sup>th</sup>	Super Nodal analysis

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	5 <sup>th</sup>	Solve Numerical
6	1 <sup>st</sup>	Source Transformation techniques and solve numerical
	2 <sup>nd</sup>	<b>Network Theorems</b> Definition of bilateral network
	3 <sup>rd</sup>	Star to delta and delta to star conversion
	4 <sup>th</sup>	Super position Theorem
	5 <sup>th</sup>	Solve numerical on super position theorem
7	1 <sup>st</sup>	Thevenin's Theorem
	2 <sup>nd</sup>	Solve numerical
	3 <sup>rd</sup>	Norton's Theorem and solve numerical
	4 <sup>th</sup>	Maximum Power transfer theorem
	5 <sup>th</sup>	<b>AC Circuit and Resonance</b> – AC through RL, RC, RLC circuit
8	1 <sup>st</sup>	Solution of problems of AC through RL, RC, RLC series circuit
	2 <sup>nd</sup>	Solution of problems of AC through RL, RC, RLC parallel and composite circuit
	3 <sup>rd</sup>	Power factor and power triangle
	4 <sup>th</sup>	Expression for active, reactive and apparent power
	5 <sup>th</sup>	Derive the expression for series and parallel resonance
9	1 <sup>st</sup>	Bandwidth, Selectivity and Q factor in series resonance
	2 <sup>nd</sup>	Solve numerical
	3 <sup>rd</sup>	<b>Polyphase Circuit-</b> Concept of polyphase system and phase sequence
	4 <sup>th</sup>	Relation between phase and line in star and delta conversion
	5 <sup>th</sup>	Power equation in three phase circuit
10	1 <sup>st</sup>	Solve numerical on three phase power, star delta
	2 <sup>nd</sup>	Measurement of three phase power – Two wattmeter method
	3 <sup>rd</sup>	Solve numerical
	4 <sup>th</sup>	<b>Transient</b> – Steady state and transient response
	5 <sup>th</sup>	Transient response of series RL circuit having DC excitation
11	1 <sup>st</sup>	Transient response of series RC circuit having DC excitation
	2 <sup>nd</sup>	Transient response of series RLC circuit having DC excitation
	3 <sup>rd</sup>	Transient response of series RLC circuit having AC excitation
	4 <sup>th</sup>	Additional Examples

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	5 <sup>th</sup>	
12	1 <sup>st</sup>	<b>Two Port Network</b> – Network Elements (Linear, Non linear, Active, Passive, Bilateral)
	2 <sup>nd</sup>	Network Configuration
	3 <sup>rd</sup>	Z parameters (Equation, Matrix form)
	4 <sup>th</sup>	Y Parameters
	5 <sup>th</sup>	Transmission Parameters (ABCD parameters)
13	1 <sup>st</sup>	Hybrid Parameters and solve numerical
	2 <sup>nd</sup>	Condition for Reciprocal and symmetry
	3 <sup>rd</sup>	Inter Relationships between parameters (Z in terms of ABCD, Y, h)
	4 <sup>th</sup>	Inter Relationships between parameters (Y in terms of ABCD, Z, h)
	5 <sup>th</sup>	Inter Relationships between parameters (ABCD in terms of Z, Y, h)
14	1 <sup>st</sup>	Solve Numerical
	2 <sup>nd</sup>	Solve Numerical and Doubt Clear
	3 <sup>rd</sup>	<b>Filters</b> – Define filter
	4 <sup>th</sup>	Classification of Filters – BPF, BSF, LPF, HPF
	5 <sup>th</sup>	Difference between active and passive filter
15	1 <sup>st</sup>	Cut off frequency
	2 <sup>nd</sup>	Constant K – LPF and HPF
	3 <sup>rd</sup>	Constant K – BPF and BSF
	4 <sup>th</sup>	Solve numerical
	5 <sup>th</sup>	Solve numerical and Doubt Clear