

LESSON PLAN
Th.2 CIRCUIT THEORY (ETC)
BY
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JHARSUGUDA ENGINEERING SCHOOL,JHARSUGUDA

Chapter	Hours	WEEK	Lecture No.	Topic to be covered
Chapter-1	6	1	CIRCUIT ELEMENTS& ENERGY SOURCES	
			1	Circuit elements (Resistance, Inductance, Capacitance), Scope of network analysis & synthesize
			1	Voltage Division & Current Division, Energy Sources
			1	Electric charge, electric current, Electrical energy, Electrical potential, R-L-C parameters, Active& Passive Elements.
			1	Energy Sources, Current and voltage sources and their transformation & mutual inductance
Chapter-2	12	2	NETWORK THEOREMS (Applications in dc circuits)	
			2	Nodal Analysis of Electrical Circuits with simple problem.
		3	2	Mesh Analysis of Electrical Circuits with simple problem.
			1	Voltage Division & Current Division, Energy Sources
			1	Norton's Theorem
		4	1	Maximum Power transfer Theorem,Solve numerical problems of above.
			1	Superposition Theorem,Solve numerical problems of above.
			1	Millman Theorem,Solve numerical problems of above.
			1	Thevenin's Theorem,Solve numerical problems of above.
		5	1	Thevenin's Theorem,Solve numerical problems of above.
			1	Reciprocity Theorem-Statement,Explanation & applications.
		Chapter-3	12	5
1	Definition of frequency, Cycle, Time period, Amplitude, Average value, RMS value, Instantaneous power & Form factor, Apparent power, Reactive power, power Triangle of AC Wave			
1	Phasor representation of alternating quantities .			
6	1			Single phase Ac circuits-Behaviors of A.C. through pure Resistor, Inductor & Capacitor
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Chapter-4	10	1	Single phase Ac circuits-Behaviors of A.C. through pure Resistor, Inductor & Capacitor		
		1	DC Transients-Behaviors of R-L, R-C, R-L-C series circuit & draw the phasor diagram and voltage triangle		
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			2	DC Transients-Behaviors of R-L, R-C, R-L-C series circuit & draw the phasor diagram and voltage triangle	
			1	Define Time Constant of the above Circuit	
		2	Solve numerical simple problems of above Circuit		
		8	RESONANCE AND COUPLED CIRCUITS		
			1	Introduction to resonance circuits & Resonance tuned circuit	
			1	Series resonance	
			9	1	Parallel resonance
2	Expression for series resonance, Condition for Resonance, Frequency of Resonance, Impedance, Current, Voltage, power, Q Factor and Power Factor of Resonance, Bandwidth in term of Q.				
1	Parallel Resonance (RL, RC& RLC)& derive the expression				
10	1		Parallel Resonance (RL, RC& RLC)& derive the expression		
	1		Comparisons of Series & Parallel resonance& applications		
	2	simple problems of above Circuit			
Chapter-5	8	LAPLACE TRANSFORM AND ITS APPLICATIONS			
		11	2	Laplace Transformation,	
			1	Laplace Transformation, Analysis and derive the equations for circuit parameters of Step response of R-L.	
			1	Laplace Transformation, Analysis and derive the equations for circuit parameters of Step response of R-C.	
		12	1	Laplace Transformation, Analysis and derive the equations for circuit parameters of Step response of R-L-C.	
			1	Analysis and derive the equations for circuit parameters of Impulse response of R-L.	
			1	Analysis and derive the equations for circuit parameters of Impulse response of RC.	
			1	Analysis and derive the equations for circuit parameters of Impulse response of R-L-C	
Chapter-6	5	Two Port Network Analysis			
		13	1	Network elements, ports in Network (One port, two port)	
			1	Network Configurations (T & pie).	

			1	Open circuit (Z-Parameter)& Short Circuit(Y-Parameter) Parameters- Calculate open & short Circuit Parameters for Simple Circuits & its conversion	
			1	h- parameter (hybrid parameter) Representation	
			1	Define T-Network & pie-Network.	
Chapter-7	7	14	FILTERS& ATTENUATORS		
			1	Ideal & Practical filters and its applications, cut off frequency, passband and stop band.	
			2	Classify filters- low pass, high pass, band pass, band stop filters & study their Characteristics.	
			15	2	Butterworth Filter Design
		1		Attenuation and Gain, Bel , Decibel & neper and their relations.	
		1		Attenuators& its applications. Classification-T- Type & PI – Type attenuators	