

**ACADEMIC LESSON PLAN OF WINTER 2023**

Discipline: ELECTRONICS AND TELECOMMUNIC ATION	Semester: 3 <sup>rd</sup> Sem	Name of the Teaching Faculty: Rakesh pattanayak
Subject: Circuit Theory	No. of days/per week class allotted:4p/we ek	Semester From: 1 <sup>st</sup> Aug 2023 to 30 <sup>th</sup> Nov 2023 No. of weeks: 17 weeks
Week	Class Day	Theory Topics
1 <sup>st</sup>	1 <sup>st</sup>	1.1 Circuit elements (Resistance, Inductance, Capacitance), Scope of network analysis & synthesize.
	2 <sup>nd</sup>	1.2 Voltage Division & Current Division, Energy Sources (Conti...)
	3 <sup>rd</sup>	1.2 Voltage Division & Current Division, Energy Sources
	4 <sup>th</sup>	1.3 Electric charge, electric current, Electrical energy, Electrical potential, R-L-C parameters, Active & Passive Elements.
2 <sup>nd</sup>	1 <sup>st</sup>	1.4 Energy Sources, Current and voltage sources and their transformation & mutual inductance
	2 <sup>nd</sup>	1.5 Star – Delta transformation
	3 <sup>rd</sup>	2.1 Nodal & Mesh Analysis of Electrical Circuits (Conti...)
	4 <sup>th</sup>	2.1 Nodal & Mesh Analysis of Electrical Circuits with simple problem.
3 <sup>rd</sup>	1 <sup>st</sup>	2.2.1 Thevenin's Theorem Statement, Explanation (Conti..)
	2 <sup>nd</sup>	2.2.1 Thevenin's Theorem problem solved
	3 <sup>rd</sup>	2.2.2 Norton's Theorem Statement, Explanation (Conti...)
	4 <sup>th</sup>	2.2.2 Norton's Theorem problems solved
4 <sup>th</sup>	1 <sup>st</sup>	2.2.3 Maximum Power transfer Theorem Statement, Explanation and simple problems
	2 <sup>nd</sup>	2.2.4 Superposition Theorem Statement, Explanation (Conti...)
	3 <sup>rd</sup>	2.2.4 Superposition Theorem with simple problems
	4 <sup>th</sup>	2.2.5 Millman Theorem Statement, Explanation with problems
5 <sup>th</sup>	1 <sup>st</sup>	2.2.6 Reciprocity Theorem -Statement, Explanation & simple problems
	2 <sup>nd</sup>	2.3 Solve numerical problems of above.
	3 <sup>rd</sup>	3.1 Definition of frequency, Cycle, Time period, Amplitude, Average value, RMS value, Instantaneous power & Form factor, Apparent power, Reactive power, power Triangle of AC Wave.(Conti....)
	4 <sup>th</sup>	3.1 Definition of frequency, Cycle, Time period, Amplitude, Average value, RMS value, Instantaneous power & Form factor, Apparent power, Reactive power, power Triangle of AC Wave. (Conti....)
6 <sup>th</sup>	1 <sup>st</sup>	3.1 Definition of frequency, Cycle, Time period, Amplitude, Average value, RMS value, Instantaneous power & Form factor, Apparent power, Reactive power, power Triangle of AC Wave.
	2 <sup>nd</sup>	3.2 Phasor representation of alternating quantities
	3 <sup>rd</sup>	3.3 Single phase Ac circuits-Behaviors of A.C. through pure Resistor, Inductor & Capacitor. (Conti....)
	4 <sup>th</sup>	3.3 Single phase Ac circuits-Behaviors of A.C. through pure Resistor, Inductor & Capacitor.
7 <sup>th</sup>	1 <sup>st</sup>	3.4 DC Transients-Behaviors of R-L, R-C, R-L-C series circuit & draw the phasor diagram and voltage triangle. (Conti....)
	2 <sup>nd</sup>	3.4 DC Transients-Behaviors of R-L, R-C, R-L-C series circuit & draw the phasor diagram and voltage triangle
	3 <sup>rd</sup>	3.4 DC Transients-Behaviors of R-L, R-C, R-L-C series circuit & draw the phasor diagram and voltage triangle
	4 <sup>th</sup>	3.5 Define Time Constant of the above Circuit
8 <sup>th</sup>	1 <sup>st</sup>	3.6 Solve numerical simple problems of above Circuit. (Conti....)
	2 <sup>nd</sup>	3.6 Solve numerical simple problems of above Circuit.

	3 <sup>rd</sup>	4.1 Introduction to resonance circuits & Resonance tuned circuit (Conti....)
	4 <sup>th</sup>	4.1 Introduction to resonance circuits & Resonance tuned circuit.
9 <sup>th</sup>	1 <sup>st</sup>	4.2 Series& Parallel resonance
	2 <sup>nd</sup>	4.3 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. (Conti....)
	3 <sup>rd</sup>	4.3 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. (Conti....)
	4 <sup>th</sup>	4.3 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.
10 <sup>th</sup>	1 <sup>st</sup>	4.4 Parallel Resonance (RL, RC&RLC)& derive the expression (Conti....)
	2 <sup>nd</sup>	4.4 Parallel Resonance (RL, RC&RLC)& derive the expressions
	3 <sup>rd</sup>	4.5 Comparisons of Series & Parallel resonance& applications (Conti....)
	4 <sup>th</sup>	4.5 Comparisons of Series & Parallel resonance& applications 4.6 simple problems of above Circuit
11 <sup>th</sup>	1 <sup>st</sup>	5.1 Laplace Transformation, Analysis and derive the equations for circuit parameters of Step response of R-L, R-C &R-L-C (Conti....)
	2 <sup>nd</sup>	5.1 Laplace Transformation, Analysis and derive the equations for circuit parameters of Step response of R-L, R-C &R-L-C
	3 <sup>rd</sup>	5.2 Analysis and derive the equations for circuit parameters of Impulse response of R-L, RC, R-L-C (Conti....)
	4 <sup>th</sup>	5.2 Analysis and derive the equations for circuit parameters of Impulse response of R-L, , R-L-C
12 <sup>th</sup>	1 <sup>st</sup>	5.2Analysis and derive the equations for circuit parameters of Impulse response of RC
	2 <sup>nd</sup>	5.2Analysis and derive the equations for circuit parameters of Impulse response of RLC
	3 <sup>rd</sup>	Problems solve for Laplace transformation
	4 <sup>th</sup>	Problems solve for Laplace transformation (Conti...)
13 <sup>th</sup>	1 <sup>st</sup>	6.1 Network elements, ports in Network (One port, two port)
	2 <sup>nd</sup>	6.2 Network Configurations (T & pie).
	3 <sup>rd</sup>	6.3 Open circuit (Z-Parameter)& Short Circuit(Y-Parameter) Parameters- Calculate open & short Circuit Parameters for Simple Circuits & its conversion
	4 <sup>th</sup>	6.4 h- parameter (hybrid parameter) Representation
14 <sup>th</sup>	1 <sup>st</sup>	6.5 Define T-Network & pie – Network
	2 <sup>nd</sup>	7.1 Ideal &Practical filters and its applications, cut off frequency, pass band and stop band.
	3 <sup>rd</sup>	7.2 Classify filters- low pass, high pass, band pass, band stop filters & study their Characteristics.
	4 <sup>th</sup>	7.3 Butterworth Filter Design
15 <sup>th</sup>	1 <sup>st</sup>	7.4 Attenuation and Gain, Bel , Decibel & neper and their relations.
	2 <sup>nd</sup>	7.5 Attenuators& its applications. Classification-T- Type & PI – Type attenuators( CONT)
	3 <sup>rd</sup>	Attenuators& its applications. Classification-T- Type & PI – Type attenuators( CONT)
	4 <sup>th</sup>	Attenuators& its applications. Classification-T- Type & PI – Type attenuators.
16 <sup>th</sup>	1 <sup>st</sup>	Revision Class
	2 <sup>nd</sup>	Revision Class
	3 <sup>rd</sup>	Revision Class
	4 <sup>th</sup>	Revision Class
17 <sup>th</sup>	1 <sup>st</sup>	Revision Class
	2 <sup>nd</sup>	Revision Class
	3 <sup>rd</sup>	Revision Class
	4 <sup>th</sup>	Revision Class

*Rakesh Kumar Pattnayak*

Signature of Teaching Faculty

