

Detailed Teaching Plan

Lecture No.	Unit No.	Topic to be covered	Books & Page Nos.	Notes Page Nos.	Slide Nos.	A/V Resource
01	01.	Basic Concept Terminology, Identify the commonly used components and materials in an electrical circuit.	A. CHAKRABARTI			
02	01.	Classification of electrical elements: Active and passive, Unilateral and bilateral, Independent and dependent source	-----DO-----			
03	01.	Passive Elements/ Components (R, L and C): Steady state behaviour in DC circuit examples of given type(s) of elements.	-----DO-----			
04	01.	Ohm's law, law of Resistance, Measure voltage and current in a given linear electric circuit	-----DO-----			
05	01.	Simple Series and parallel resistive circuits. Application of above laws to simple circuits	-----DO-----			
06	01.	Solve Circuit simplification of the given electrical circuit using Combination of Resistance	-----DO-----			
07	01.	Source, types of Sources, Source transformation (only concept, no numerical).	-----DO-----			
08	01.	Measure current and voltage in a particular branch of the given electrical circuit using Ohms law & Combination of Resistance	-----DO-----			
09	01.	Kirchhoff's Current and Voltage Law, Application of above laws to simple circuits	-----DO-----			
10	01.	Measure current and voltage in a particular branch of the given electrical circuit using Kirchhoff's Current Law.	-----DO-----			
11	01.	Measure voltage drop in a closed loop of the given electrical circuit using Kirchhoff's Voltage Law.	-----DO-----			
12	01.	Mesh Current analysis (limited up to two loop/node problems)	-----DO-----			
13	01.	Using Mesh Current Analysis Determine the current and voltage in a given electrical circuit.	-----DO-----			
14	01.	Nodal Voltage analysis (limited up to two loop/node problems)	-----DO-----			

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15	01.	Using Node Voltage Analysis Determine the current and voltage in a given electrical circuit.	A. CHAKRABARTI			
16	03.	Concept of Generation of an alternating EMF	-----DO-----			
17	03.	AC circuit quantities: Peak value, RMS and Average value of a Sinusoidal voltage waveform	-----DO-----			
18	03.	Differentiate the given AC circuit quantities.	-----DO-----			
19	03.	Compare power factor of a resistive, inductive and Capacitive circuit & Determine Power factor by different methods	-----DO-----			
20	03.	J-operator, AC Series and parallel circuits, Phasor diagrams and impedance triangle	-----DO-----			
21	03.	Active, reactive, apparent power and power factor in RLC circuit.	-----DO-----			
22	03.	Determine the active, reactive, apparent power and power factor of the given AC circuit	-----DO-----			
23	03.	Determine the current and voltage, impedance of the given series RL/RC circuit	-----DO-----			
24	03.	Determine the current and voltage, impedance of the given series RLC circuit	-----DO-----			
25	03.	Determine the current and voltage, impedance of the given parallel RL/RC circuit	-----DO-----			
26	03.	Determine the current and voltage, impedance of the given parallel RLC circuit	-----DO-----			
27	03.	Convert the given AC quantity in rectangular to polar and vice versa and other Arithmetic operations.	-----DO-----			
28	03.	Vector representation of an alternating quantity, addition, subtraction,	-----DO-----			

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29	03.	Vector representation of an alternating quantity, multiplication and division	A. CHAKRABARTI			
30	03.	Concept of Reactive power Factor & Power Triangle, related numerical	-----DO-----			
31	04.	Definition of resonance and its importance in electrical circuit	-----DO-----			
32	04.	Determine the current at series resonance	-----DO-----			
33	04.	Series resonance: Derivation of resonance frequency and simple numerical	-----DO-----			
34	04.	Observe the variation of power factor for varying inductance for a series RLC circuit	-----DO-----			
35	04.	Definition: Quality factor, bandwidth and selectivity in series RLC circuit. (No derivations)	-----DO-----			
36	04.	Effect on current and power factor in series resonance circuit	-----DO-----			
37	04.	Determine the current at parallel resonance	-----DO-----			
38	04.	Determine the impedance of a circuit during parallel resonance.	-----DO-----			
39	04.	Analyse the causes and effects of resonance in a electrical network	-----DO-----			
40	04.	Determine the equivalent impedance and current magnitude of the given parallel RLC circuit under resonance condition	-----DO-----			
41	04.	The significance of quality factor of the given series RLC circuit.	-----DO-----			
42	04.	Determine the impedance of a circuit during parallel resonance	-----DO-----			

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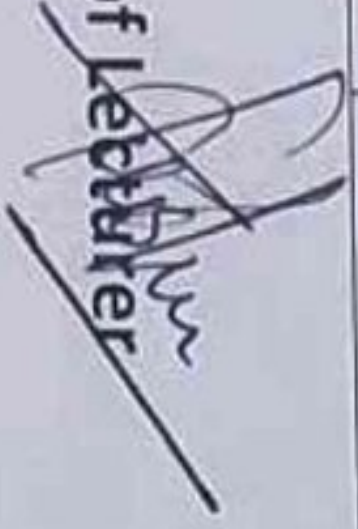
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43	05.	Generation of three phase voltage	A. CHAKRABARTI			
44	05.	Three phase three wire source and three phase four wire source, Phase sequence and phasor diagram	-----DO-----			
45	05.	Connection of three phase winding in Star/Delta	-----DO-----			
46	05.	Line and phase electrical quantity relationship: Star	-----DO-----			
47	05.	Measure the line /phase current, line voltage/phase voltage for the given three phase load connected to a three-phase source	-----DO-----			
48	05.	Line and phase electrical quantity relationship: Delta	-----DO-----			
49	05.	Measure the line /phase current, line voltage/phase voltage for the given three phase load connected to a three-phase source	-----DO-----			
50	05.	Measure neutral displacement voltage of the given three phase unbalanced load connected to a three-phase source. Measure three phase power for the given star connected load.	-----DO-----			
51	05.	Three phase loads: Balanced /Unbalanced	-----DO-----			
52	05.	Measure three phase power for the given star /delta connected load	-----DO-----			
53	05.	Measurement of power in three phase circuits	-----DO-----			
54	05.	Measure three phase power for the given star /delta connected load.	-----DO-----			
55	05.	Determine the power and power factor of the given three phase load using two wattmeter	-----DO-----			
56	05.	Numerical related to 3 phase Star connection	-----DO-----			

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57	05.	Numerical related to 3 phase Star connection	A. CHAKRABARTI			
58	05.	Numerical related to 3 phase Delta connection	-----DO-----			
59	05.	Numerical related to 3 phase Delta connection	-----DO-----			
60	05.	Numerical related to 2 Wattmeter connection	-----DO-----			
61	02.	Star/Delta transformation of passive network	-----DO-----			
62	02.	Connect star Connected resistances to its equivalent delta connection and determine the equivalent resistance.	-----DO-----			
63	02.	Connect delta Connected resistances to its equivalent Star connection and determine the equivalent resistance	-----DO-----			
64	02.	Reduce the given passive network by applying star/delta and delta/star transformation and measure equivalent resistance.	-----DO-----			
65	02.	Derive & proof the concept Thevenin's theorem	-----DO-----			
66	02.	Measure load current in the load resistance using Thevenin's theorem in a given circuit	-----DO-----			
67	02.	Measure the circuit parameters of the given network using Thevenin's theorem.	-----DO-----			
68	02.	Derive & proof the Concept Norton's theorem	-----DO-----			
69	02.	Measure load current in the load resistance using Norton's theorem in a given circuit.	-----DO-----			
70	02.	Measure the circuit parameters of the given network using Norton's theorem.	-----DO-----			

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71	02.	Derive & proof the Concept Superpositions theorem	A. CHAKRABARTI			
72	02.	Measure current in a branch of the given electrical circuit having two or more input sources using Super position theorem.	----DO----			
73	02.	Measure the circuit parameters of the given network using superposition's theorem.	----DO----			
74	02.	Derive & proof the Concept of Maximum Power Transfer theorem	----DO----			
75	02.	Determine the maximum power and load resistance for which circuit has maximum power using maximum power transfer theorem	----DO----			

Signature of Lecturer 

Signature of HOD