

LESSON PLAN

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| Discipline: E& T.C Engg. | Semester: Third (3 rd) | Name of the Faculty: SUBRAT KUMAR KABI |
| Subject: Circuit Theory. | No. of days/week class allotted: Five (5) | Semester from Date: 01.08.2023 to Date: 30.11.2023 No. of Weeks: 15 |
| WEEK | CLASS DAY | THEORY TOPICS |
| 1 st | 1 st | Circuit elements (Resistance, Inductance, Capacitance), Scope of network analysis & synthesize |
| | 2 nd | Voltage Division & Current Division, Energy Sources |
| | 3 rd | Electric charge, electric current, Electrical energy, Electrical potential |
| | 4 th | RLC parameters, Active & Passive Elements. |
| | 5 th | Energy Sources, Current and voltage sources and their transformation, & Mutual Inductance |
| 2 nd | 1 st | Star – Delta transformation |
| | 2 nd | Review Class |
| | 3 rd | Nodal Analysis of Electrical Circuits with simple problem |
| | 4 th | Mesh Analysis of Electrical Circuits with simple problem |
| | 5 th | Thevenin's Theorem |
| 3 rd | 1 st | Norton's Theorem |
| | 2 nd | Maximum Power transfer Theorem |
| | 3 rd | Superposition Theorem |
| | 4 th | Millman Theorem |
| | 5 th | Reciprocity Theorem-Statement, |
| 4 th | 1 st | Explanation & applications |
| | 2 nd | Solve numerical problems of above |
| | 3 rd | Solve numerical problems of above |

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| | 4 th | Solve numerical problems of above |
| | 5 th | Mothly Test |
| 5 th | 1 st | Solve numerical problems of above |
| | 2 nd | Review Class |
| | 3 rd | Definition of frequency, Cycle, Time period, Amplitude, Average value, RMS value, Instantaneous power & Form factor |
| | 4 th | Reactive power, power Triangle of AC Wave |
| | 5 th | Phasor representation of alternating quantities |
| 6 th | 1 st | Single phase Ac circuits-Behaviors of A.C. through pure Resistor, Inductor & Capacitor |
| | 2 nd | DC Transients-Behaviors of RL series circuit & draw the phasor diagram and voltage triangle |
| | 3 rd | DC Transients-Behaviors of R-C series circuit & draw the phasor diagram and voltage triangle |
| | 4 th | DC Transients-Behaviors of R-L-C series circuit & draw the phasor diagram and voltage triangle. |
| | 5 th | Define Time Constant of the above Circuit |
| 7 th | 1 st | Solve numerical simple problems of above Circuit |
| | 2 nd | Solve numerical simple problems of above Circuit |
| | 3 rd | Solve numerical simple problems of above Circuit |
| | 4 th | Mothly Test |
| | 5 th | Solve numerical simple problems of above Circuit |
| 8 th | 1 st | Review Class |
| | 2 nd | Introduction to resonance circuits & Resonance tuned circuit, |
| | 3 rd | Series& Parallel resonance |
| | 4 th | Expression for series resonance, Condition for Resonance, Frequency of Resonance, |
| | 5 th | Impedance, Current, Voltage, power, Q Factor and Power Factor of Resonance, Bandwidth in term of Q. |
| | 1 st | Parallel Resonance (RL&RC)& derive the expression |
| | 2 nd | Parallel Resonance RLC& derive the expression |

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| 9 th | 3 rd | Comparisons of Series & Parallel resonance & applications |
| | 4 th | simple problems of above Circuit |
| | 5 th | simple problems of above Circuit |
| 10 th | 1 st | simple problems of above Circuit |
| | 2 nd | Review Class |
| | 3 rd | Introductions of Laplace Transformation |
| | 4 th | Analysis and derive the equations for circuit parameters of Step response of R-L ckt |
| | 5 th | Monthly Test |
| 11 th | 1 st | Analysis and derive the equations for circuit parameters of Step response of R-C ckt |
| | 2 nd | Analysis and derive the equations for circuit parameters of Step response of R-L-C ckt |
| | 3 rd | Analysis and derive the equations for circuit parameters of Impulse response of R-L ckt |
| | 4 th | Analysis and derive the equations for circuit parameters of Impulse response of R-C ckt |
| | 5 th | Analysis and derive the equations for circuit parameters of Impulse response of R-L-C ckt |
| 12 th | 1 st | Analysis and derive the equations for circuit parameters of Impulse response of R-L-C ckt (Cont..) |
| | 2 nd | Review Class |
| | 3 rd | Network elements, ports in Network (One port, two port), |
| | 4 th | Network Configurations (T & pie) |
| | 5 th | Open circuit (Z-Parameter) & Short Circuit (Y-Parameter) Parameters- Calculate open & short Circuit Parameters for Simple Circuits & its conversion |
| | 1 st | h- parameter (hybrid parameter) Representation |
| | 2 nd | Define T-Network & pie – Network |

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| 13 th | 3 rd | Numerical problem |
| | 4 th | Review Class |
| | 5 th | Ideal & Practical filters and its applications, cut off frequency, passband and stop band. |
| 14 th | 1 st | Classify filters- low pass, high pass filters & study their Characteristics. |
| | 2 nd | band pass, band stop filters & study their Characteristics. |
| | 3 rd | Butterworth Filter Design |
| | 4 th | Attenuation and Gain, Bel , Decibel & neper and their relations |
| | 5 th | Mothly test |
| 15 th | 1 st | Attenuators & its applications. Classification-T- Type attenuators |
| | 2 nd | Classification PI – Type attenuators |
| | 3 rd | Review Class |
| | 4 th | Revision class |
| | 5 th | Revision class |