



DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING

| ACADEMIC LESSION PLAN FOR WINTER SEMESTER 2021-22 | |
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| JHARSUGUDA ENGINEERING SCHOOL, JHARSUGUDA | |
| Academic Year: 2021-22 | Name of the Faculty: SUNIL LUMAR PAL |
| Course name : Circuit Theory | Course No.: Th 2 |
| Branch: Electronics & Telecommunication | Programme: Diploma |
| Total Period s : 60 P/ Sem | Year/Sem: 2nd/3rd |
| Examination : 3 Hours | End Semester Exam : 80marks |
| TOTAL MARKS :100 Marks | Internal Assessment : 20 Marks |

| Sl. No. | Period | Time (min) | Unit/ Chapter | Topic to be covered | Teaching method |
|---------|--------|------------|--|--|--|
| 1. | 1. | 55 | 1 | Circuit elements (Resistance, Inductance, Capacitance), Scope of network analysis & synthesize | Black board |
| 2. | 2. | 55 | | Voltage Division & Current Division, Energy Sources | Black board |
| 3. | 3. | 55 | | Electric charge, electric current, Electrical energy, Electrical potential, R-L-C parameters, Active & Passive Elements. | Black board |
| 4. | 4. | 55 | | Energy Sources, Current and voltage sources and their transformation & mutual inductance | Black board |
| 5. | 5. | 55 | | Star – Delta transformation | Black board |
| 6. | 6. | 55 | | 2 | Nodal Analysis of Electrical Circuits with simple problem. |
| 7. | 7. | 55 | Mesh Analysis of Electrical Circuits with simple problem. | | Black board |
| 8. | 8. | 55 | Voltage Division & Current Division, Energy Sources | | Black board |
| 9. | 9. | 55 | Norton's Theorem | | Black board |
| 10. | 10. | 55 | Maximum Power transfer Theorem, Solve numerical problems of above. | | Black board |
| 11. | 11. | 55 | Superposition Theorem, Solve numerical problems of above. | | Black board |



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| 12. | 12. | 55 | | Millman Theorem, Solve numerical problems of above. | Audio visual smart class |
| 13. | 13. | 55 | | Thevenin's Theorem, Solve numerical problems of above. | Black board |
| 14. | 14. | 55 | | Reciprocity Theorem-Statement, Explanation & applications. | Black board |
| 15. | 15. | 55 | 3 | Definition of frequency, Cycle, Time period, Amplitude, Average value, RMS value, Instantaneous power & Form factor, Apparent power, Reactive power, power Triangle of AC Wave | Black board |
| 16. | 16. | 55 | | Phasor representation of alternating quantities . | Black board |
| 17. | 17. | 55 | | Single phase Ac circuits-Behaviors of A.C. through pure Resistor, Inductor & Capacitor | Audio visual smart class |
| 18. | 18. | 55 | | Single phase Ac circuits-Behaviors of A.C. through pure Resistor, Inductor & Capacitor | Black board |
| 19. | 19. | 55 | | Single phase Ac circuits-Behaviors of A.C. through pure Resistor, Inductor & Capacitor | Black board |
| 20. | 20. | 55 | | DC Transients-Behaviors of R-L, R-C, R-L-C series circuit & draw the phasor diagram and voltage triangle | Black board |
| 21. | 21. | 55 | | DC Transients-Behaviors of R-L, R-C, R-L-C series circuit & draw the phasor diagram and voltage triangle | Black board |
| 22. | 22. | 55 | | Define Time Constant of the above Circuit | Black board |
| 23. | 23. | 55 | | Solve numerical simple problems of above Circuit | Black board |
| 24. | 24. | 55 | | 4 | Introduction to resonance circuits & Resonance tuned circuit |
| 25. | 25. | 55 | Series resonance | | Black board |
| 26. | 26. | 55 | Parallel resonance | | Black board |
| 27. | 27. | 55 | Expression for series resonance, Condition for Resonance, Frequency of Resonance, Impedance, Current, Voltage, power, | | Black board |
| 28. | 28. | 55 | | | Black board |
| 29. | 29. | 55 | Q Factor and Power Factor of Resonance, Bandwidth in term of Q. | | Black board |
| 30. | 30. | 55 | Parallel Resonance (RL, RC & RLC) & derive the expression | | Black board |



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| 31. | 31. | 55 | | Parallel Resonance (RL, RC& RLC)& derive the expression | Audio visual smart class |
| 32. | 32. | 55 | | Comparisons of Series & Parallel resonance& applications | Audio visual smart class |
| 33. | 33. | 55 | | simple problems of above Circuit | Audio visual smart class |
| 34. | 34. | 55 | | Laplace Transformation, | Black board |
| 35. | 35. | 55 | | Laplace Transformation, Analysis and derive the equations for circuit parameters of Step response of R-L. | Black board |
| 36. | 36. | 55 | | Laplace Transformation, Analysis and derive the equations for circuit parameters of Step response of R-C. | Black board |
| 37. | 37. | 55 | | 5 | Laplace Transformation, Analysis and derive the equations for circuit parameters of Step response of R-L-C. |
| 38. | 38. | 55 | | Analysis and derive the equations for circuit parameters of Impulse response of R-L. | Black board |
| 39. | 39. | 55 | | Analysis and derive the equations for circuit parameters of Impulse response of RC. | Black board |
| 40. | 40. | 55 | | Analysis and derive the equations for circuit parameters of Impulse response of R-L-C | Black board |
| 41. | 41. | 55 | | simple problems of above Circuit | Black board |
| 42. | 42. | 55 | | simple problems of above Circuit | Audio visual smart class |
| 43. | 43. | 55 | | simple problems of above Circuit | Black board |
| 44. | 44. | 55 | 6 | Network elements, ports in Network (One port, two port) | Black board |
| 45. | 45. | 55 | | Network Configurations (T & pie). | Black board |
| 46. | 46. | 55 | | Open circuit (Z-Parameter)& Short Circuit(Y-Parameter) Parameters- | Black board |
| 47. | 47. | 55 | | Calculate open & short Circuit Parameters for Simple Circuits & its conversion | Black board |
| 48. | 48. | 55 | | h- parameter (hybrid parameter) Representation | Black board |
| 49. | 49. | 55 | | Define T-Network & pie-Network. | Black board |
| 50. | 50. | 55 | | simple problems of above Circuit | Black board |
| 51. | 51. | 55 | | simple problems of above Circuit | Black board |



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| 52. | 52 | 55 | 7 | Ideal & Practical filters and its applications | Black board |
| 53. | 53 | 55 | | , cut off frequency, passband and stop band. | Black board |
| 54. | 54 | 55 | | Classify filters- low pass, high pass, band pass, band stop filters & study their Characteristics. | Black board |
| 55. | 55 | 55 | | Classify filters- low pass, high pass, band pass, band stop filters & study their Characteristics. | Black board |
| 56. | 56 | 55 | | Butterworth Filter Design | Black board |
| 57. | 57 | 55 | | Attenuation and Gain, Bel , Decibel & neper and their relations. | Black board |
| 58. | 58 | 55 | | Attenuators& its applications. | Black board |
| 59. | 59 | 55 | | Classification-T- Type & PI – Type attenuators | Black board |
| 60. | 60 | 55 | | simple problems of above Circuit | Black board |