

ANURAG Engineering College
(An Autonomous Institution)

II B.Tech I Semester Regular/Supplementary Examinations, December – 2024

NETWORK ANALYSIS AND SYNTHESIS
(ELECTRONICS & COMMUNICATION ENGINEERING)

Time: 3 Hours

Max. Marks: 60

Section – A (Short Answer type questions)

(10 Marks)

Answer All Questions

1. What is Self-inductance?
2. Write the volt-ampere relations of L parameters.
3. Write the expression for transient current in R-L-Circuit.
4. Define band width of a series resonant circuit.
5. Define zeros in a transfer function
6. Define characteristic impedance.
7. What are asymmetrical Attenuators?
8. List the Applications High Pass filter.
9. Define transfer impedance.
10. List any two differences between foster and causer methods.

Course Outcome	B.T Level	Marks
CO1	L1	1M
CO1	L1	1M
CO2	L2	1M
CO2	L1	1M
CO3	L1	1M
CO3	L2	1M
CO4	L1	1M
CO4	L1	1M
CO5	L1	1M
CO5	L2	1M

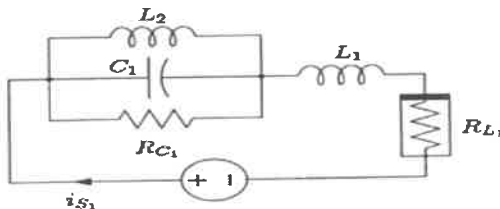
Section B (Essay Questions)

Answer all questions, each question carries equal marks.

(5 X 10M = 50M)

11. A) Draw the directed graph, tree, cut set matrix and tie set matrix for the network shown in figure.

CO1 L3 10M



OR

- B) Clearly explain the following:
i) Self-inductance (L) ii) Mutual inductance (M)

CO1 L3 10M

12. A) R-C series circuit is suddenly excited from a step voltage V. Derive an expression for the current as a function of time and draw the graph current Vs Time.

CO2 L3 10M

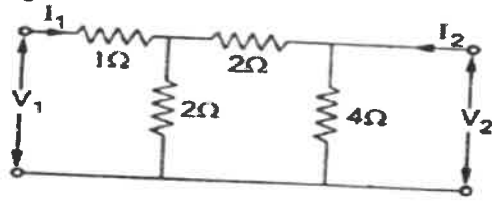
OR

- B) A series RLC circuit with $R=50\Omega$, $L=0.1H$ and $C=50\mu F$ has a constant voltage $V=100V$ applied at $t=0$. Find the current transient assuming zero initial charge on the capacitor.

CO2 L3 10M

13. A) Find the y and ABCD parameters for the following circuit shown in figure

CO3 L3 10M



OR

B) Explain different parameters to be considered for design of attenuators.

CO3 L3 10M

14. A) Explain the design procedure for a constant K low pass filter and its characteristics.

CO4 L2 10M

OR

B) Describe the Draw the low pass T filter and draw its frequency response.

CO4 L3 10M

15. A) Explain the concept of positive real functions and their significance in network theory.

CO5 L3 10M

OR

B) Explain the synthesis of LC networks using causer's method. Illustrate with a step-by-step example.

CO5 L3 10M