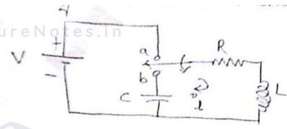
MODULE-3

TRANSIENT BEHAVIOR AND INITIAL CONDITION

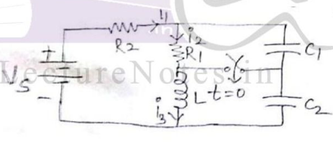
1.In the circuit shown in figure, the switch is moved from ' a ' to 'b' at t=0. Find the values of I di/dt, d^2i/dt^2 at $t=0_+$, if R=1 Ω, L=1H, C=0.1 μF and V = 100 V. Assume steady state is achieved when K is at 'a'.



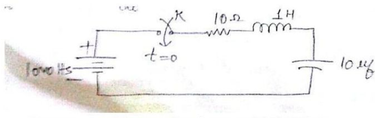
2.Explain the importance of study of initial condition in electric circuit analysis.

3.Explain the behavior of R,L and C elements for transients. Mention their representation at the instant of switching.

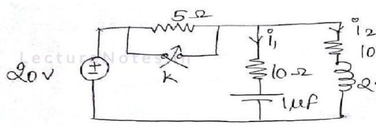
4.Determine the loop currents at $t=(0_+)$ for the circuit shown.



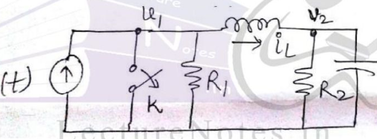
5.For the network diagram shown in figure find out $i(0_+)$, $di/dt\ (0_+)$ and $d^2i\ (0_+)/dt^2$, take Vc (0)=0, if K is closed at t=o.



6. In the network shown in figure, the switch 'k' is opened at t=0, after the network has attained steady state the switch is closed. Find i_1, i_2 at $t=0_+$



7. The network shown in figure, has two independent node pairs; of the switch K is opened at t=0, find the following quantities at $t=0_+$.

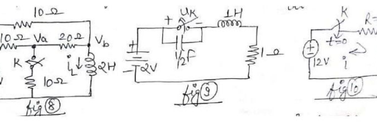


8.For the network shown in (fig8), steady state is reached with switch K open .At t=0, the switch is closed. For the element values, determine the value of V_a (O-) and V_a (0_+).

9.The network shown in fig9 is in steady state with switch K is closed. At t=0, switch is opened.\

Determine V_K & dk/dt at $t=0_+$

10.In the circuit(fig10), switch is closed at t=0, obtain the expression for the current in circuit and find I at t=o.25 sec.



TWO PORT NETWORK PARAMETER

1. Find Z and Y for the two port network shown in fig. 13

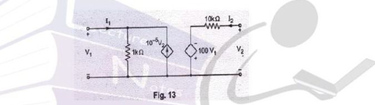


Fig. 13

2.Define h and T parameters and derive expressions for [h] in terms of [T]

3. Define Y and Z parameters. Derive relationship such that Y parameters expressed in terms of Z parameters and z parameters expressed in terms of y parameters.

4. Two 2 port network are connected in cascade. Obtain T-parameters of the interconnected network in terms of the T-parameters of the individual networks.

5. For the network shown in fig.14 obtain the o.c. impedance parameters.

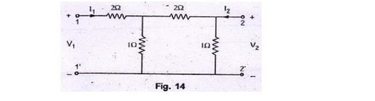
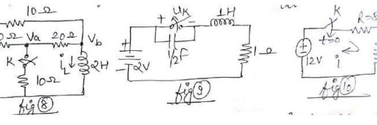


Fig. 14

6. (i) Assuming that stair case voltage waveform of Fig. 12 is not repeated find its Laplace transform.



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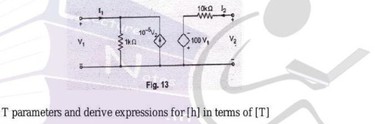

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