

May - June 2023

(B. Tech.) Program: B.Tech (Electronics and Telecommunication)

Examination: SY Semester: III

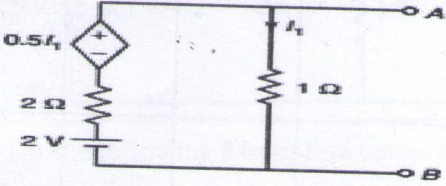
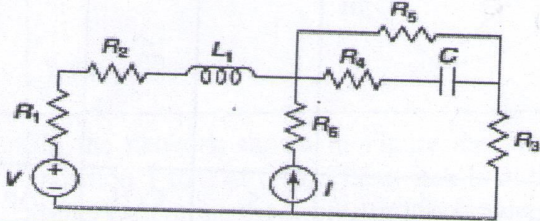
Course Code: EXC305 and Course Name: Electrical Network Theory

Duration: 02 Hours

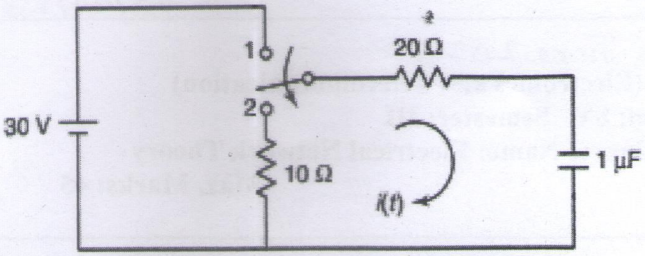
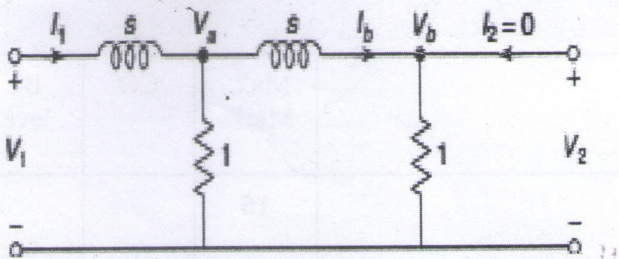
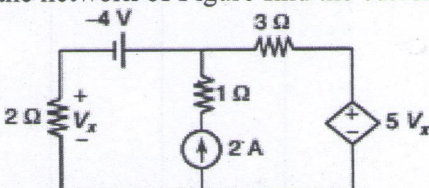
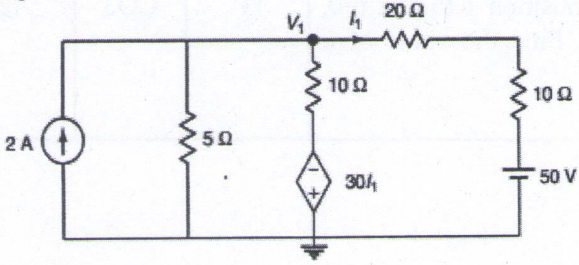
Max. Marks: 45

Instructions:

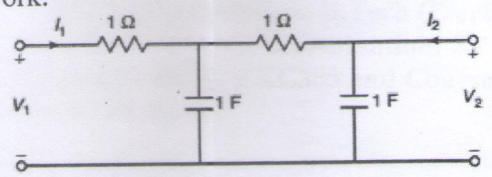
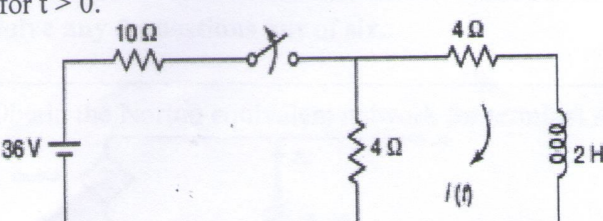
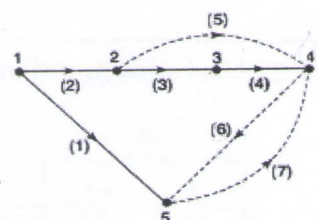
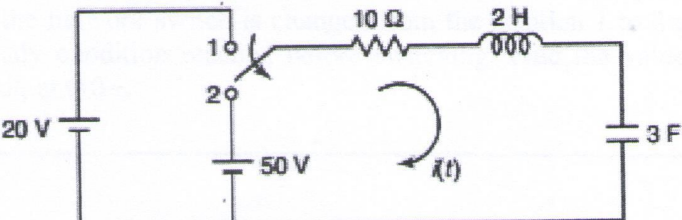
- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

		Max. Marks	CO	BT level
Q 1	Solve any 5 questions out of six.	15		
i)	Obtain the Norton equivalent network for terminal A & B 	3	CO1	Ap
ii)	For the network shown below, write incidence matrix. 	3	CO2	R,U
iii)	In the network switch is changed from the position 1 to 2 at $t=0$, steady condition reached before switching. Find the value of i , di/dt , at $t=0+$.	3	CO3	Ap

03/6/23

				
iv)	Write equations and conditions for symmetry of Y parameter.	3	CO4	R
v)	<p>For the network shown in Figure, Determine the voltage transfer function V_2/V_1.</p> 	3	CO5	Ap
vi)	<p>Test whether $F(s)$ is positive real function.</p> $F(s) = \frac{s^2 + 4}{s^3 + 3s^2 + 3s + 1}$	3	CO6	Ap
Q.2	Solve any three questions out of four.	15		
i)	<p>In the network of Figure find the current through the $3\ \Omega$ resistor.</p> 	5	CO1	Ap
ii)	<p>Find the voltage across the $5\ \Omega$ resistor in the network shown in Figure.</p> 	5	CO1	Ap

03/6/23

iii)	Determine the short-circuit admittance parameters for the network. 	5	CO4	Ap
iv)	Test whether given function is positive real function? $F(s) = \frac{s^2 + 6s + 5}{s^2 + 9s + 14}$	5	CO6	Ap
Q.3	Solve any three questions out of four.	15		
i)	The network shown in Figure has acquired steady-state with the switch closed for $t < 0$. At $t = 0$, the switch is opened. Obtain $i(t)$ for $t > 0$. 	5	CO3	Ap
ii)	For the following graph, find tie-set and cutset matrix. 	5	CO2	Ap
iii)	In the network shown in Figure the switch is moved from the position 1 to 2 at $t = 0$. The switch is in the position 1 for a long time. Determine the expression for the current $i(t)$. 	5	CO3	Ap
iv)	Test the following polynomials whether Hurwitz or not. $P(s) = s^5 + s^3 + s$	5	CO5	Ap