

Date: 13/12/2022

Nov – Dec 2022

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

Examination: SY Semester: III

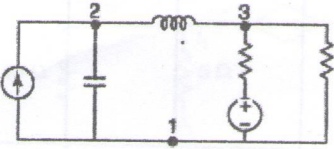
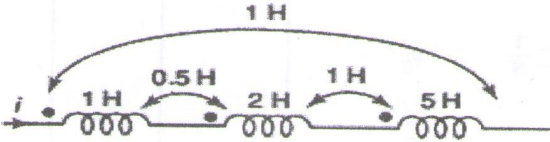
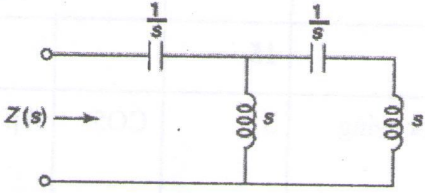
Course Code: EXC305 and Course Name: Electrical Network Theory

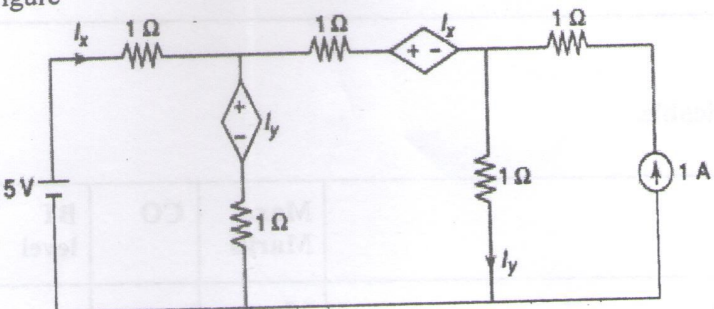
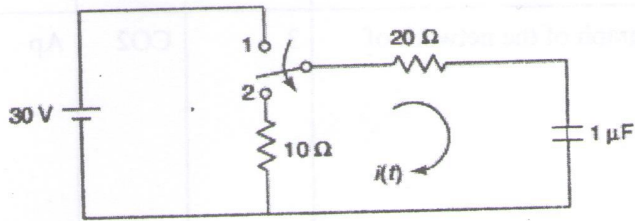
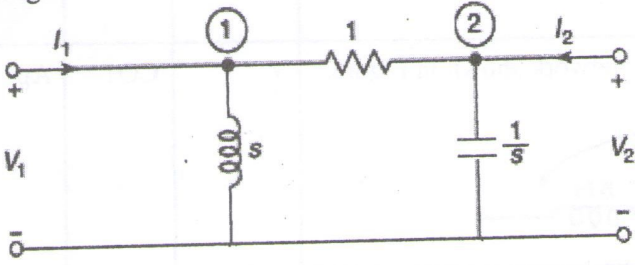
Duration: 02 Hours

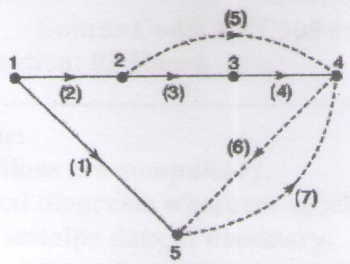
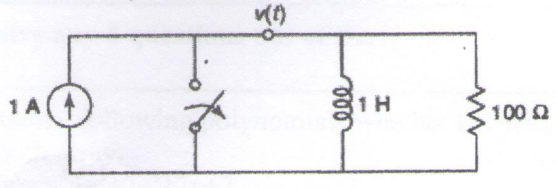
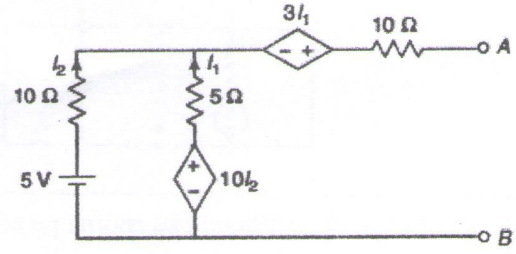
Max. Marks: 45

**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)	Test the following polynomials whether Hurwitz or not using Routh array. $P(s) = s^4 + s^3 + 2s^2 + 3s + 2$	3	CO5	Ap
ii)	How many trees are possible for the graph of the network of Figure 	3	CO2	Ap
iii)	Write equations and condition for symmetry of Y parameters.	3	CO4	R
iv)	Find the equivalent inductance of the network shown in Figure. 	3	CO1	Ap
v)	State effect of damping factor in R-L-C circuit	3	CO3	R
vi)	Determine the driving-point impedance of the network shown in Figure 	3	CO5	Ap

Q.2	Solve any three questions out of four.	15		
i)	Find the currents in the three meshes of the network shown in Figure 	5	CO1	Ap
ii)	In the network of Figure, the switch is changed from the position '1' to '2' at $t=0$ , steady condition having reached before switching. Find the values of $i$ , $di/dt$ and $d^2i/dt^2$ at $t=0^+$ 	5	CO3	Ap
iii)	Determine the transmission parameters for the network shown in Figure 	5	CO4	Ap
iv)	Test whether given function is positive real function? $F(s) = \frac{s^2 + 1}{s^3 + 4s}$	5	CO6	Ap
Q.3	Solve any three questions out of four.	15		
i)	Test the following polynomials whether Hurwitz or not using continued fraction expansion. $P(s) = s^5 + 3s^3 + 2s$	5	CO5	Ap

<p>ii)</p>	<p>The graph of a network is shown in Figure, Write the (a) incidence matrix, (b) tieset matrix, and (c) f-cutset matrix.</p> 	<p>5</p>	<p>CO2</p>	<p>Ap</p>
<p>iii)</p>	<p>In the network shown in Figure at <math>t = 0</math>, the switch is opened. Calculate <math>v, dv/dt</math> and <math>d^2v/dt^2</math>.</p> 	<p>5</p>	<p>CO3</p>	<p>Ap</p>
<p>iv)</p>	<p>Find Norton's equivalent network across terminals A and B of Figure</p> 	<p>5</p>	<p>CO1</p>	<p>Ap</p>

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