

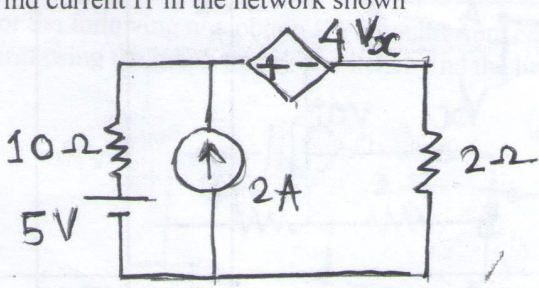
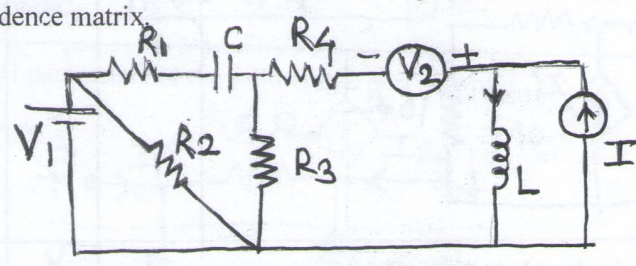
K. J. Somaiya Institute of Technology, Sion, Mumbai-22  
(Autonomous College Affiliated to University of Mumbai)

Supplementary Exam

Feb - March 2024

B. Tech - Program: EXTC Scheme II  
Examination: SY Semester: III

Course Code: EXC305 Course Name: Electrical Network and Theory Set:   
Date of Exam: 04/03/24 Duration: 02 Hours Max. Marks: 45

Instructions:		Max. Marks	CO	BT level
(1) All questions are compulsory. (2) Draw neat diagrams wherever applicable. (3) Assume suitable data, if necessary.				
Q 1	Solve any 5 questions out of six.	15		
i)	Find current $I_1$ in the network shown 	3	1	AP
ii)	Draw the oriented graph for the following circuit and obtain the incidence matrix 	3	2	AP
iii)	Explain the time domain analysis method of analysing the network.	3	3	Un
iv)	Derive the expression for Z parameters of 2 port networks.	3	4	Un
v)	The pole zero plot of the driving point admittance is given bellow. Find the function if $Z(-4) = 5$ and state whether it is RL, RC, or LC function.	3	5	Ap

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vi)	Test Whether $F(s) = \frac{s+3}{s+1}$ is PRF.	3	6	Ap
Q.2	Solve any three questions out of four.	15		
i)	Calculate and draw Thevenin's equivalent circuit.	4	1	Ap
ii)	Calculate power dissipated in 10ohm resistor using Norton's Theorem.	4	1	Ap
iii)	In the network shown the switch is closed at $t=0$ , Find the current $i_1(t)$ and $i_2(t)$ when the initial current through the inductor is zero and initial voltage is 4 volt.	4	3	Ap
iv)	Test whether $S^2 + S + 6 / S^2 + S + 1$ is PRF.	4	6	

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Q.3	Solve any three questions out of four.	15		
i)	<p>The graph of the network is given bellow. Obtain the tie set matrix.</p>	4	2	Ap
ii)	<p>For the following n/w obtain KVL equilibrium equation in matrix form using the graph theory and hence find the link currents.</p>	4	2	Ap
iii)	<p>Find H parameters of the following 2 port network</p>	4	4	Ap
iv)	Test whether $P(S)=S^5+12S^4+45S^3+60S^2+44S+48$ is Hurwitz.	4	5	Ap

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