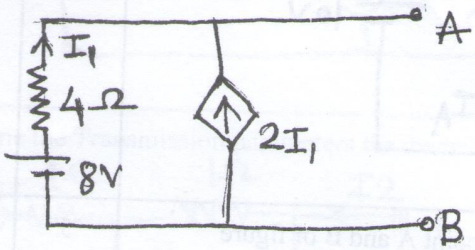
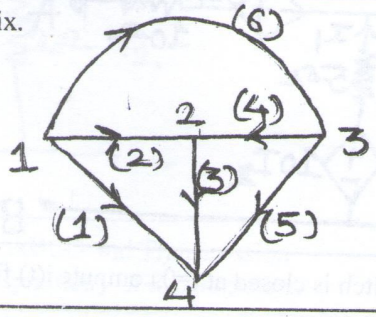
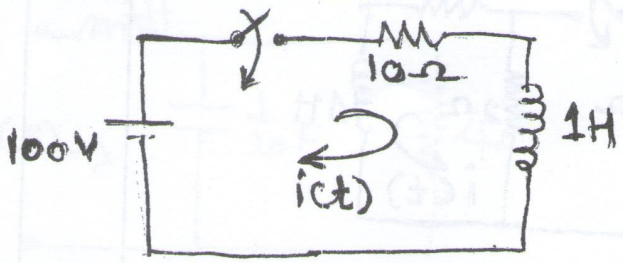
K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

Nov-Dec 2023
B.Tech -**Program**: EXTC **Scheme** II
Examination: SY Semester: III
Course Code: EXC305 **Course Name**: Electrical Network and Theory **Set**:
Date of Exam: 8/12/23 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)	Compute Thevenin's voltage of the Network shown in fig. 	3	1	Ap
ii)	Write complete Incidence matrix. 	3	2	Ap
iii)	In the given network, the switch is closed at t=0.with zero current in inductor, calculate values of i, di/dt at t=0+ 	3	3	Ap
iv)	Write condition for Symmetry and Reciprocity of ABCD parameters.	3	4	Un

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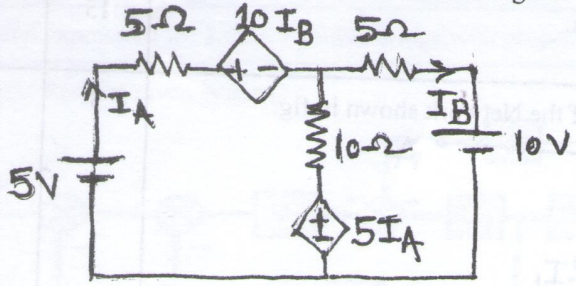
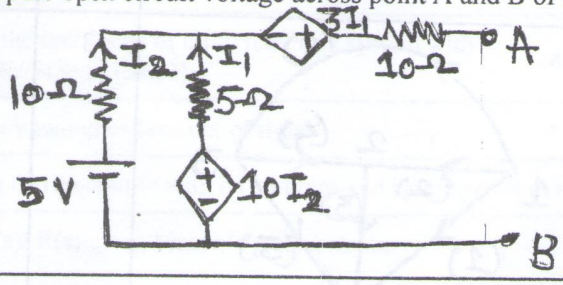
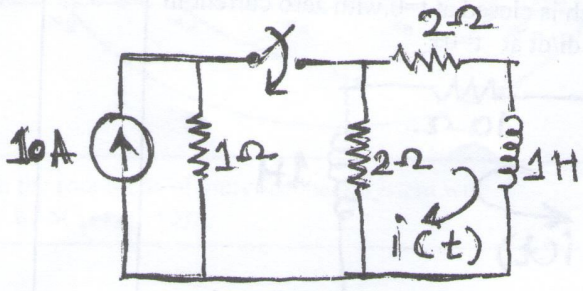
v)	Test whether polynomial $P(s)=s^3+4s^2+5s+2$ is Hurwitz	3	5	Ap
vi)	State necessary and sufficient conditions for positive real functions	3	6	Un
Q.2	Solve any three questions out of four.	15		
i)	Obtain branch currents in the network shown in figure 	5	1	Ap
ii)	Compute open circuit voltage across point A and B of figure 	5	1	Ap
iii)	In the figure, the switch is closed at t=0,compute i(t) for t>0 	5	3	Ap

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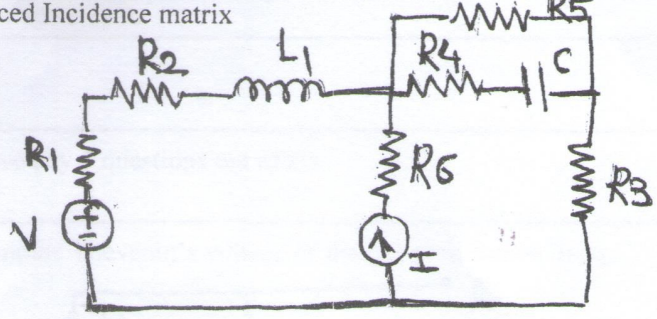
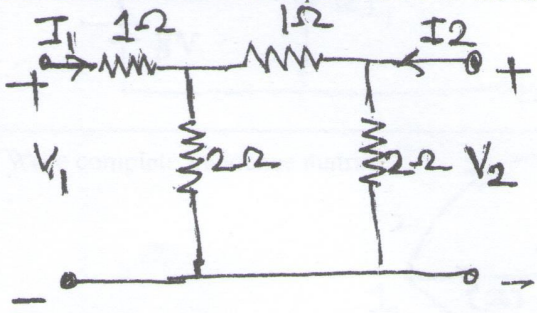
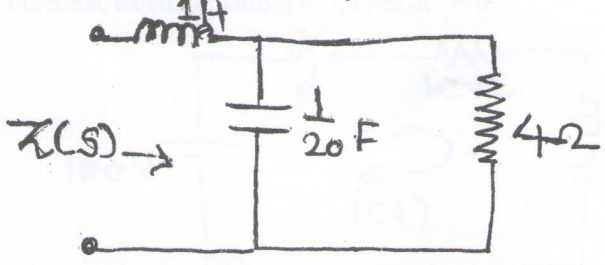
Course Code: EXC305 **Course Name**: Electrical Network and Theory **Set:** 2
Date of Exam: 8/12/23 Duration: 02 Hours Max. Marks: 45

iv)	Test whether F (s)= $(s^2+1)/(s^3+4s)$ is a positive real function	5	6	Ap
Q.3	Solve any three questions out of four.	15		
i)	Draw Oriented graph and obtain Complete Incidence matrix and Reduced Incidence matrix 	5	2	Un
ii)	Determine the Transmission parameters for the network shown 	5	4	Ap
iii)	Write down the equations of Z, Y, ABCD and Transmission parameters and write condition of symmetry of Z parameters.	5	4	Un
iv)	Determine Z(s) in the network shown in figure. Compute poles and zeros of Z(s) and plot them on s-plane. 	5	5	Ap

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