

Scheme - IIB

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

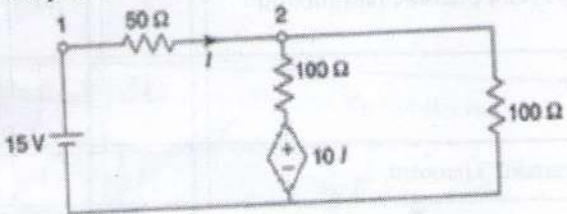
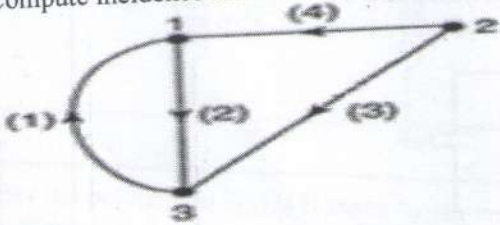
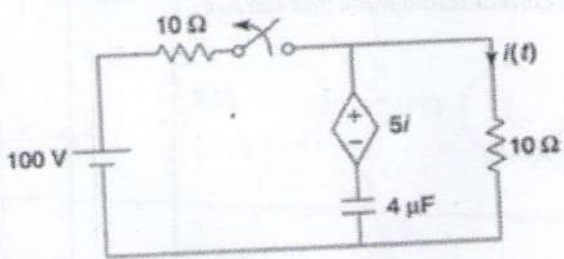
Nov-Dec 2024 Jan/Feb 2025

Program: B.Tech Scheme IIB/II
Backlog Examination: SY Semester: III
Course Code: EXC305 and Course Name: Electrical Network Theory
Duration: 02 Hours
Max. Marks: 45

Supplementary
Date of Exam: 30/11/24
07-02-25

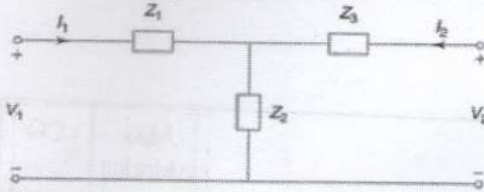
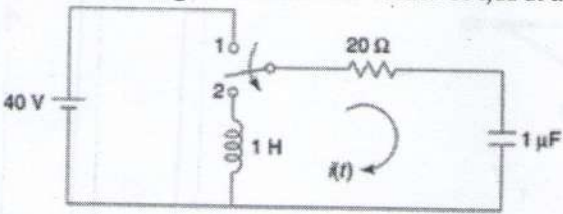
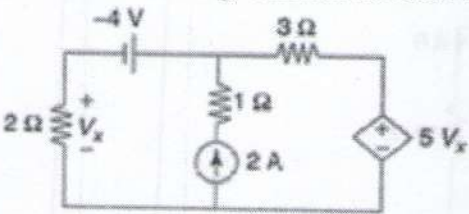
Instructions:

- (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 the voltage at Node 2 of the network shown in Fig. 		1	Ap
ii)	Compute incidence matrix from the given graph 		2	Ap
iii)	For the network shown in Fig. compute the current $i(0^-)$ when the switch is opened at $t = 0$. 		3	Ap

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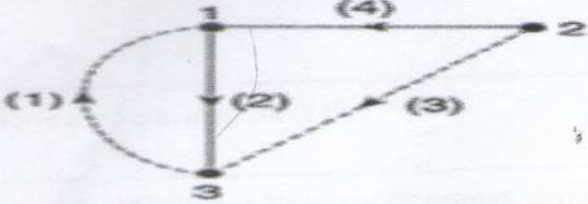
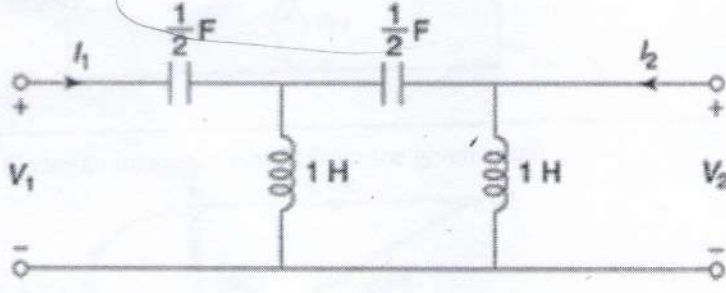
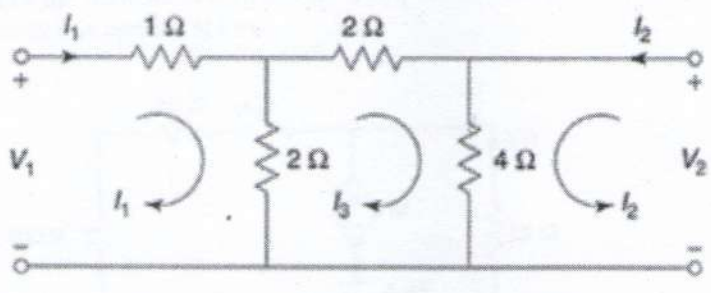
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iv)	Calculate the Z parameters for the network shown in Fig. 		4	Ap
v)	State any three Properties of Hurwitz Polynomials.		5	R
vi)	Test whether $F(s) = (s^3 + 5s) / (s^4 + 2s^2 + 1)$ is a positive real function		6	Ap
Q.2	Solve any three questions out of four.	15		
i)	State and prove Maximum Power Transfer Theorem.		1	R,U
ii)	In the network shown in Fig., the switch is changed from the position 1 to the position 2 at $t = 0$, steady condition having reached before switching. Determine the values of $i, di/dt$ at $t=0^+$ 		3	Ap
iii)	Test whether $F(s) = (s^2 + 4) / (s^3 + 3s^2 + 3s + 1)$ is a positive real function		6	Ap
iv)	In the network of Fig. calculate the current through the 3Ω resistor. 		1	Ap

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Q.3	Solve any three questions out of four.	15		
i)	Write tieset matrix, and cutset matrix. from the given graph 		2	1
ii)	Compute the Y parameters (Y_{11} and Y_{12}) for the network shown in Fig. 		4	Ap
iii)	Test whether the polynomial $P(s)$ is Hurwitz by continued fraction expansion. $P(s) = s^5 + s^3 + s$		5	Ap
iv)	Determine hybrid parameters (h_{21} and h_{22}) for the network of Fig. 		4	Ap
