

**K. J. Somaiya Institute of Engineering and Information Technology, Sion,
Mumbai-22**

(Autonomous College Affiliated to University of Mumbai)

End Semester Exam

Nov – Dec 2021

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

Examination: SY Semester: III

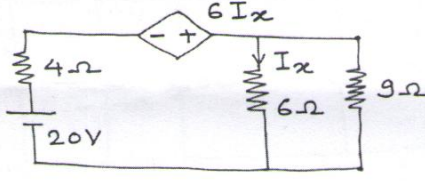
Course Code: 1UEXC305 and Course Name: Electrical Network Theory

Duration: 02 Hours

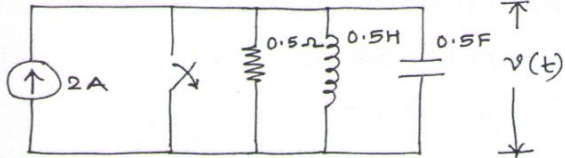
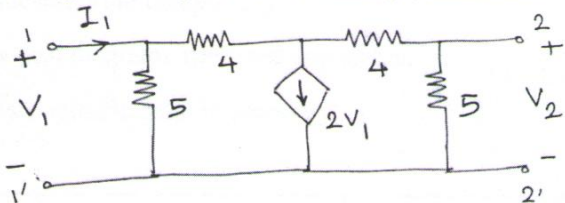
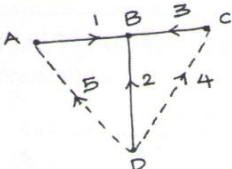
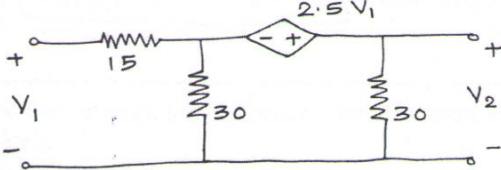
Max. Marks: 45

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)	Find Thevenin's equivalent circuit across 9Ω resistance. 		CO1	2
ii)	For the network shown below, write Incidence matrix.		CO2	2

iii)	Derive expression for instantaneous current through a driven series $R - L$ circuit at $t > 0$. Also draw the response.		CO3	2
iv)	For a two port network, find condition for symmetry in terms of z - parameters.		CO4	2
v)	For the network given, find driving point impedance $Z(s)$ and draw pole-zero plot.		CO5	2
vi)	What are the necessary and sufficient conditions for Positive Real Functions (P.R.F.)?		CO6	2
Q.2	Solve any three questions out of four.	15		
i)	Find V_y in the following network.		CO1	3
ii)	Find current through 2Ω resistance using Superposition theorem.		CO1	3

iii)	Find $v(t)$ for $t > 0$.		CO3	2
				
iv)	Test given functions $F(s)$ for positive realness. (a) $\frac{2s^3+2s^2+3s+2}{s^2+1}$ (b) $\frac{s^4+3s^3+2s^2+s+8}{s^3+s^2+s+1}$		CO6	2
Q.3	Solve any three questions out of four.	15		2
i)	For a given two port network, find y parameters.		CO4	2
				
ii)	For the following graph, find tie-set and f-cutset matrix.		CO2	2
				
iii)	Find ABCD parameters for the given network.		CO4	2
				
iv)	Test the following polynomials whether Hurwitz or not. (a) $s^4 + s^3 + 4s^2 + 2s + 3$ (b) $s^3 + 4s^2 + 5s + 20$		CO5	2