

University of Mumbai
Examination 2020 under cluster UCoE

Program: Electronics Engineering

Curriculum Scheme: Rev2012

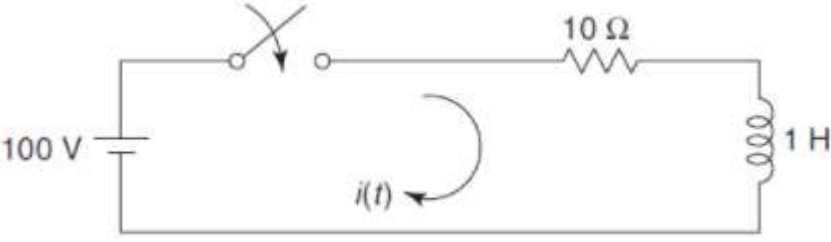
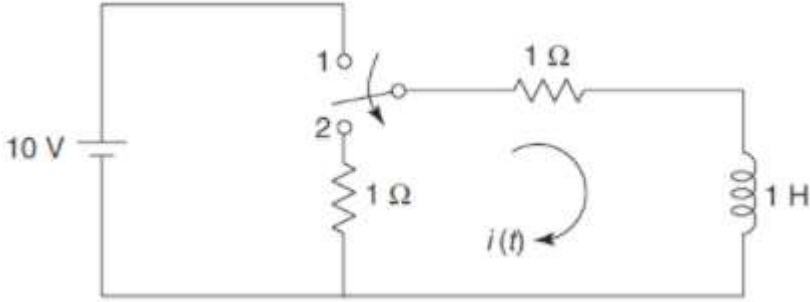
Examination: Second Year Semester III

Course Code: EXC304 and Course Name: Circuit Theory

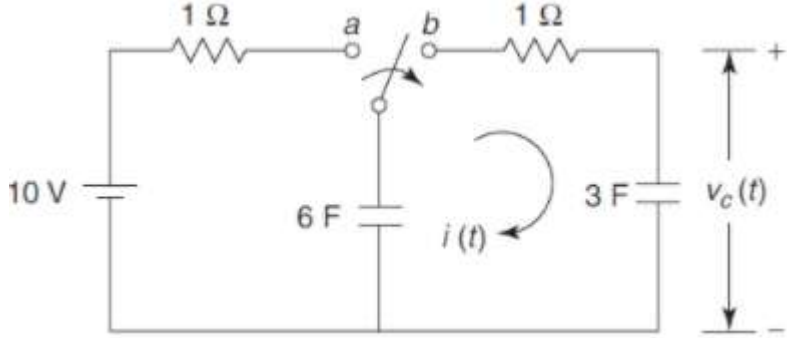
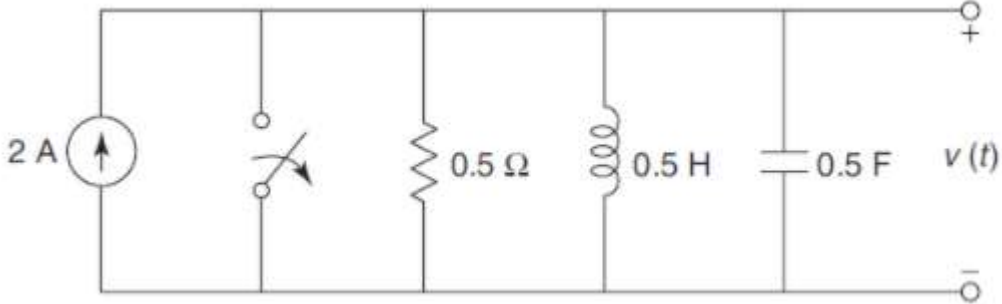
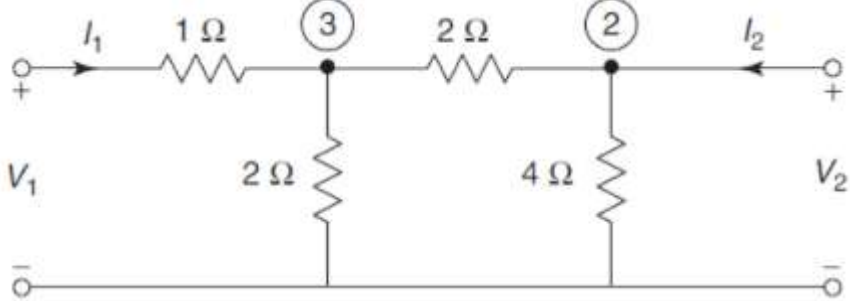
Time: 1 hour

Max. Marks: 50

Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	The network having admittance function $Y(s)=(4s^2+6s)/(s+1)$
Option A:	RC function
Option B:	LC function
Option C:	RLC function
Option D:	None of the above
Q2.	In the given network, the switch is closed at $t = 0$. With zero current in the inductor, find i at $t=0^+$
	
Option A:	0 A
Option B:	1 A
Option C:	2 A
Option D:	3 A
Q3.	In the network, the switch is moved from position 1 to position 2 at $t=0$, steady state condition having been established in the position 1. Determine $i(t)$ for $t>0$.
	
Option A:	$10e^{(-2t)}$ A
Option B:	$10e^{(2t)}$ A
Option C:	$20e^{(-2t)}$ A
Option D:	$20e^{(2t)}$ A
Q4.	In the network, the switch is moved from a to b at $t=0$. Determine $i(t)$

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Option A:	$10e^{(-0.5t)}$ A
Option B:	$10e^{(-0.5)}$ A
Option C:	$10e^{(0.5t)}$ A
Option D:	$10e^{(0.5)}$ A
Q5.	<p>The switch is opened at time $t=0$. Determine $v(t)$ for $t>0$.</p> 
Option A:	$4t * e^{(-2t)}$ A
Option B:	$4t * e^{(2t)}$ A
Option C:	$2t * e^{(-2t)}$ A
Option D:	$4t * e^{(-2t)}$ V
Q6.	<p>Determine whether the following network is symmetrical and reciprocal.</p> 
Option A:	Symmetrical and reciprocal
Option B:	Not Symmetrical and reciprocal
Option C:	Not Symmetrical and reciprocal
Option D:	Not Symmetrical and non-reciprocal
Q7.	What is the value of V_1 in the network given here?

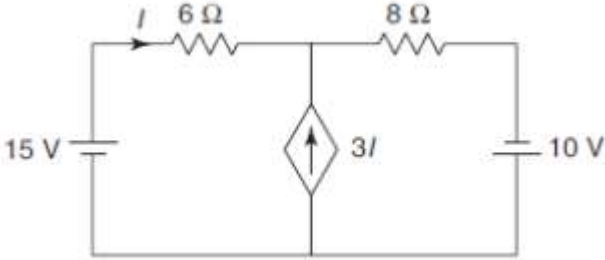
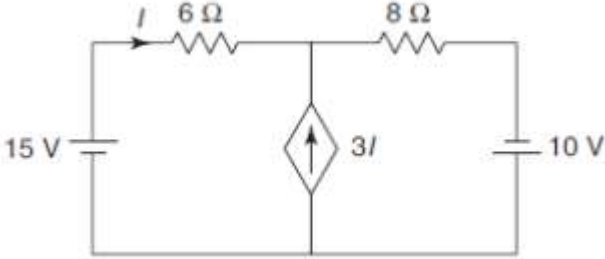
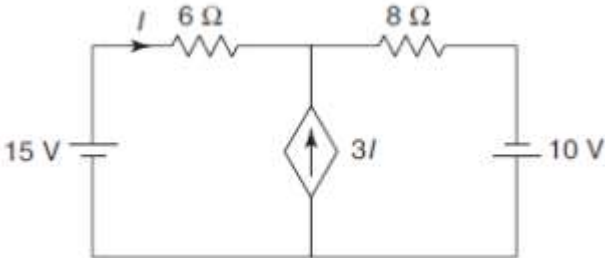
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Option A:	$5I_1$
Option B:	$-5I_1$
Option C:	$2I_2$
Option D:	$-2I_2$
Q8.	Find the current I_1 in the network shown
Option A:	1.364 A
Option B:	2.878 A
Option C:	-1.364 A
Option D:	-2.878 A
Q9.	Find the current I_2 in the network shown
Option A:	1.364 A
Option B:	2.878 A
Option C:	-1.364 A
Option D:	-2.878 A
Q10.	Find the current I_x in the network shown

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Option A:	-1.514 A
Option B:	2.878 A
Option C:	-2.878 A
Option D:	1.514 A
Q11.	<p>Find the voltage across 5 ohms resistor in the network shown</p>
Option A:	20 V
Option B:	-20 V
Option C:	40 V
Option D:	-40 V
Q12.	<p>Find the voltage V_x in the network given</p>
Option A:	-3 A
Option B:	-3 V
Option C:	-3 ohms
Option D:	-3 S
Q13.	When using Superposition theorem in the network given here, what will be the

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	<p>current through 6 ohms when only 15 V source is acting? (assuming current is in clockwise direction)</p> 
Option A:	0.3 A
Option B:	0.34 A
Option C:	0.39 A
Option D:	None of the above
Q14.	<p>When using Superposition theorem in the network given here, what will be the current through 6 ohms when only 10 V source is acting? (assuming current is in clockwise direction)</p> 
Option A:	0.2 A
Option B:	0.26 A
Option C:	0.29 A
Option D:	None of the above
Q15.	<p>When using Superposition theorem in the network given here, what will be the current through 6 ohms? (assuming current is in clockwise direction)</p> 
Option A:	1 A
Option B:	0.74 A
Option C:	0.65 A
Option D:	None of the above
Q16.	If the load resistor is 16 ohms, what is the Thevenin's equivalent voltage?

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Option A:	10 V
Option B:	20 V
Option C:	30 V
Option D:	None of these
Q17.	If the load resistor is 16 ohms, what is the Thevenin's equivalent resistance?
Option A:	6 ohms
Option B:	12 ohms
Option C:	18 ohms
Option D:	24 ohms
Q18.	Which of the following are the primary constants of a transmission line?
Option A:	R, L, G, C
Option B:	γ, Z_0
Option C:	$\gamma, VSWR$
Option D:	R and L
Q19.	When the voltages and currents are to be found out from a given network, this is called as
Option A:	Network Synthesis
Option B:	Network Analysis
Option C:	Both of the above
Option D:	None of the above
Q20.	If a normal Smith chart is rotated by 180 degrees, we get
Option A:	ZY Smith chart
Option B:	Impedance Smith chart
Option C:	Admittance Smith chart
Option D:	Black Magic Design

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Q21.	Which of the following is an example of a transmission line?
Option A:	Coaxial cable
Option B:	Twisted pair cable
Option C:	Optical fiber cable
Option D:	All of the above
Q22.	Laplace transform changes the _____ domain function to the _____ domain function.
Option A:	time, time
Option B:	time, frequency
Option C:	frequency, time
Option D:	frequency, frequency
Q23.	The resistance element _____ while going from the time domain to frequency domain.
Option A:	does not change
Option B:	increases
Option C:	decreases
Option D:	increases exponentially
Q24.	Obtain ABCD parameters for the network shown
Option A:	$11/4, 5/2, 5/4, 3/2$
Option B:	$-11/4, -5/2, -5/4, -3/2$
Option C:	$11/4, 5/2, 5/2, 3/2$
Option D:	$11/4, 5/4, 5/4, 3/2$
Q25.	Find Z_{11} for the following network
Option A:	$11/5$

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Option B:	4/5
Option C:	-4/5
Option D:	6/5