University of Mumbai

Examination 2020

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2012 (CBSGS)

Examination: Second Year Semester III

Course Code:EXC304 Course Name: Circuit Theory

Time: 1 hour **Max. Marks: 50**

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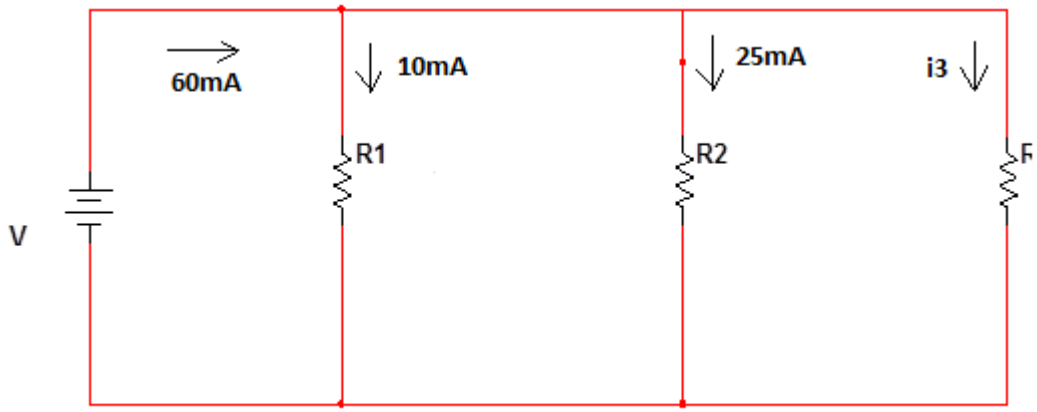
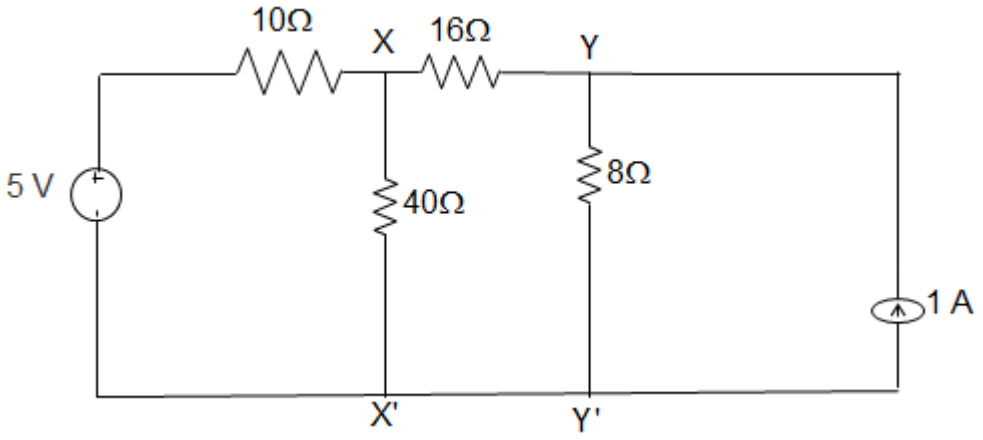
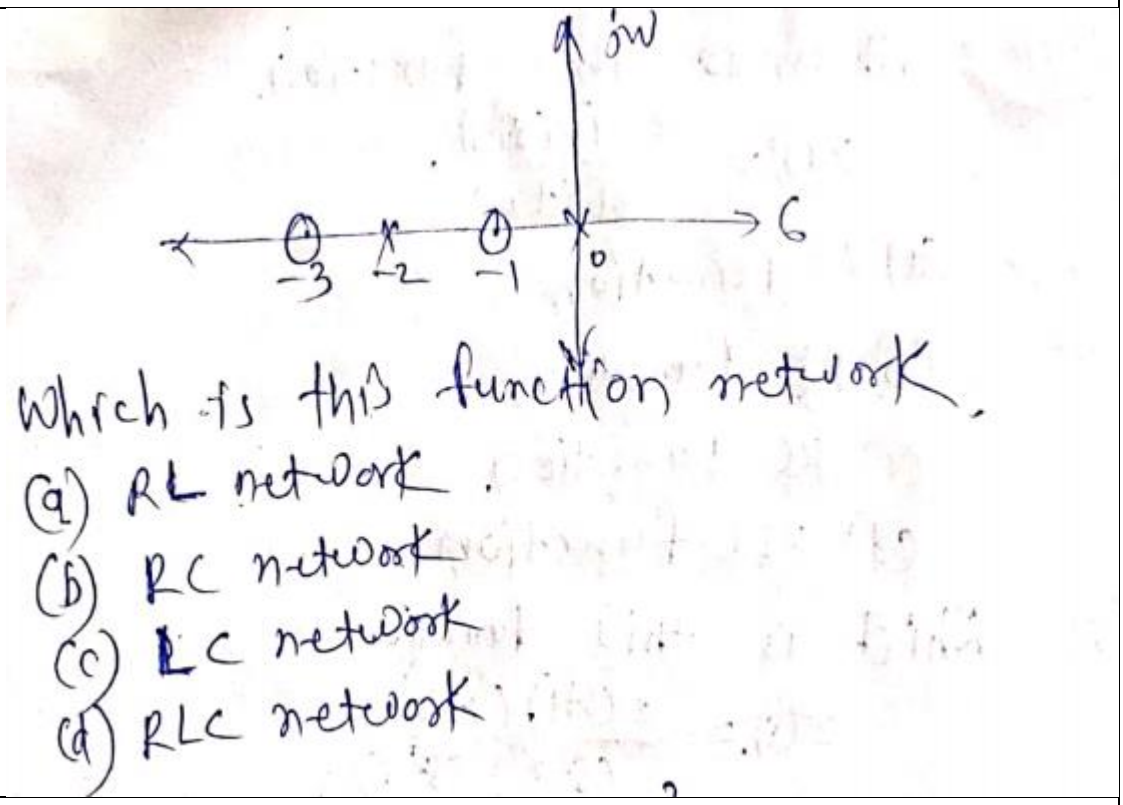
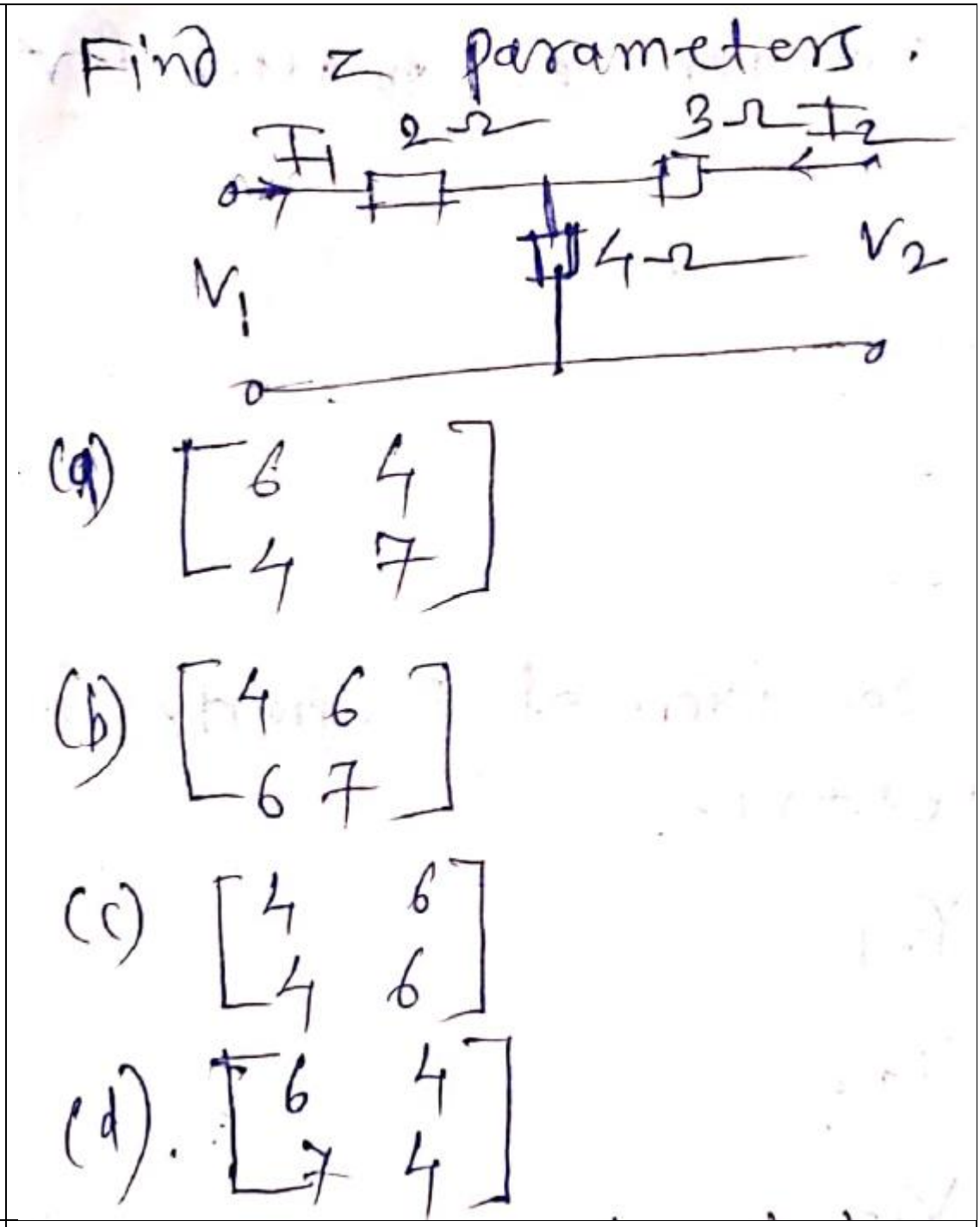
Note:

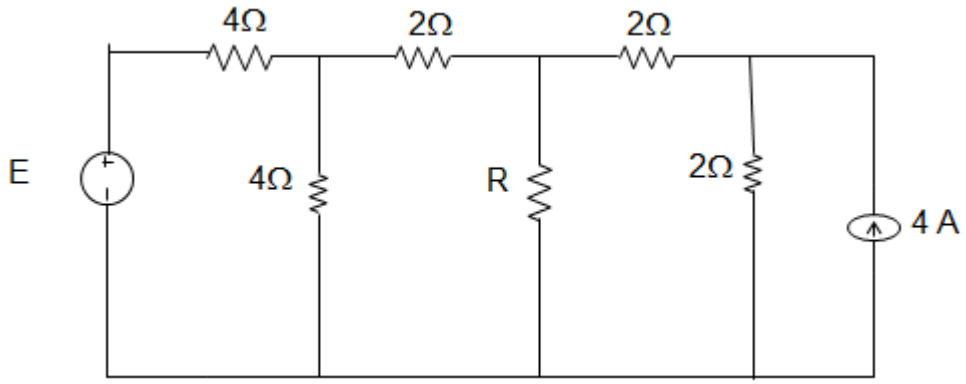
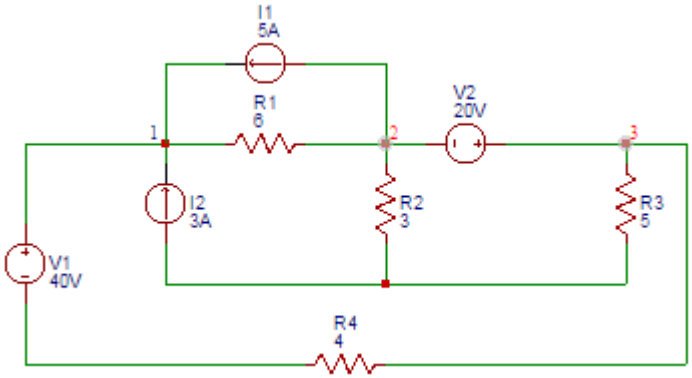
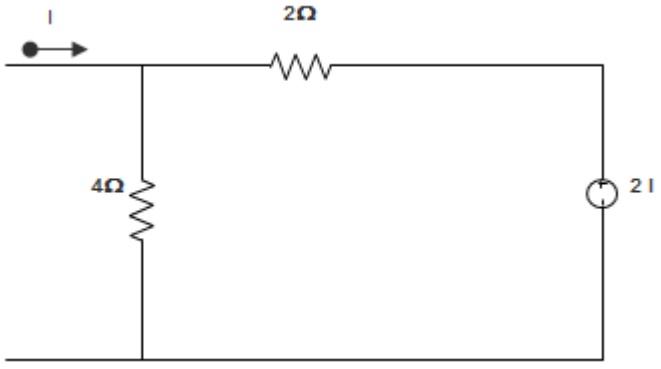
1. All Questions are compulsory and carry equal marks.

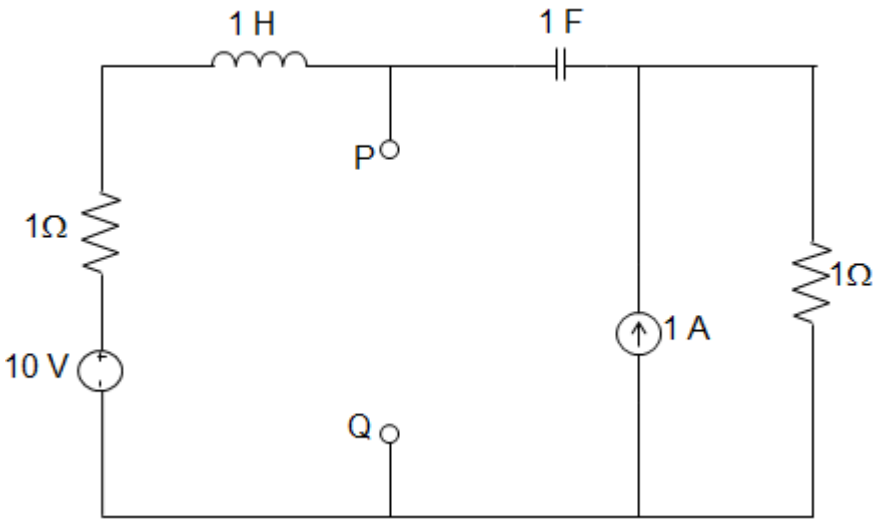
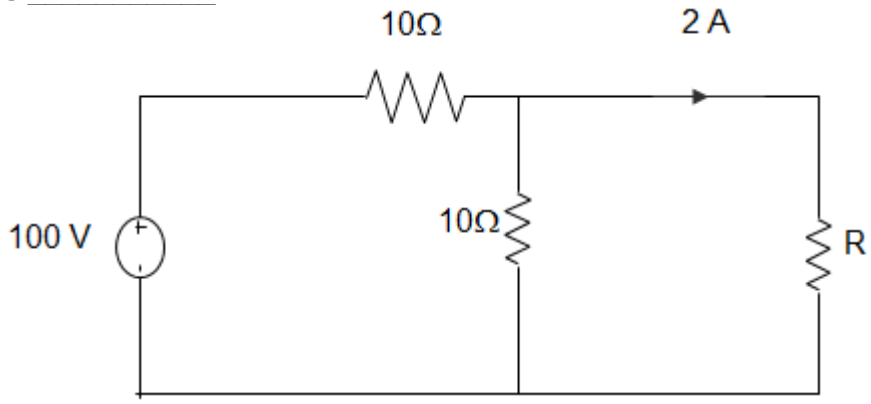
2. Assume suitable data wherever necessary.

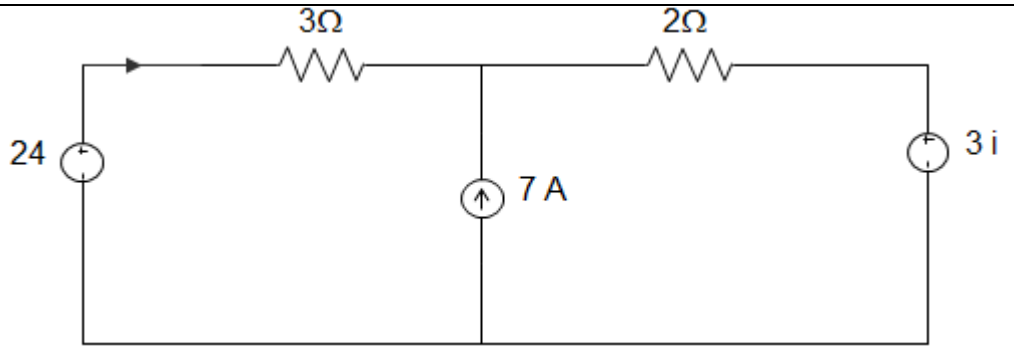
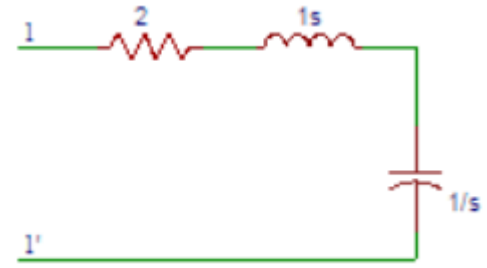
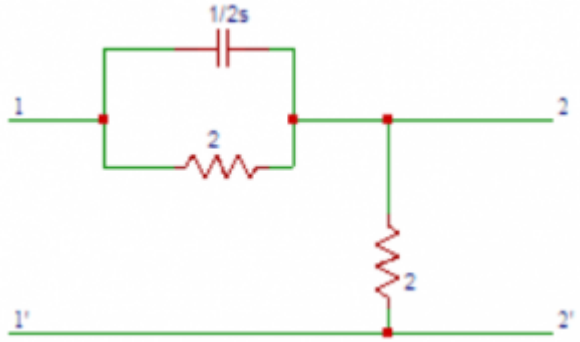
Q1.	Which is the condition of symmetry for h parameters
Option A:	h12 = -h21
Option B:	h11h22-h12h21 = 1
Option C:	h11h21-h12h22 = 1
Option D:	h11 = 22
Q2.	A 25 Ω resistor has a voltage of 150 sin377 t. Find the corresponding power.
Option A:	900 $\sin^2$ 337 t
Option B:	90 $\sin^2$ 337 t
Option C:	900 $\sin^2$ 377 t
Option D:	9 $\sin^2$ 337 t
Q3.	Determine the current through the resistor R3 shown in the figure using KCL 
Option A:	25mA
Option B:	10mA
Option C:	20mA
Option D:	35mA
Q4.	A circuit is given in the figure below. The Thevenin equivalent as viewed from terminals x and x' is _____

	
Option A:	8 V and 6 Ω
Option B:	5 V and 6 Ω
Option C:	5 V and 32 Ω
Option D:	8 V and 32 Ω
Q5.	
Option A:	
Option B:	
Option C:	
Option D:	

Q6.	
Option A:	
Option B:	
Option C:	
Option D:	
Q7.	In the following circuit, when R = 0 Ω, the current I_R equals to 10 A. The maximum power will be?

	
Option A:	50 W
Option B:	100 W
Option C:	200 W
Option D:	400 W
Q8.	. Find the voltage (V) at node 3 in the figure shown below. 
Option A:	18
Option B:	20
Option C:	22
Option D:	24
Q9.	The circuit shown in figure has a load equivalent to _____ 

Option A:	$\frac{4}{3}\Omega$
Option B:	$\frac{8}{3}\Omega$
Option C:	4Ω
Option D:	3Ω
Q10.	The Norton equivalent impedance Z between the nodes P and Q in the following circuit is _____ 
Option A:	1
Option B:	$1 + s + 1/s$
Option C:	$2 + s + 1/s$
Option D:	$3 + s + 1/s$
Q11.	In the figure given below, the value of Resistance R by Superposition Theorem is _____ 
Option A:	10
Option B:	20
Option C:	30
Option D:	40
Q12.	The current I in the circuit given below is _____

	
Option A:	¼
Option B:	5/4
Option C:	¾
Option D:	1/2
Q13.	The unit step is not defined at t =?
Option A:	0
Option B:	1
Option C:	2
Option D:	3
Q14.	For the network shown in the figure, find the driving point impedance. 
Option A:	$(s^2-2s+1)/s$
Option B:	$(s^2+2s+1)/s$
Option C:	$(s^2-2s-1)/s$
Option D:	$(s^2+2s-1)/s$
Q15.	Obtain the transfer function G_{21} (s) in the circuit shown below. 
Option A:	(8 S+2)/(8 S+1)
Option B:	(8 S+2)/(8 S+2)
Option C:	(8 S+2)/(8 S+3)
Option D:	(8 S+2)/(8 S+4)

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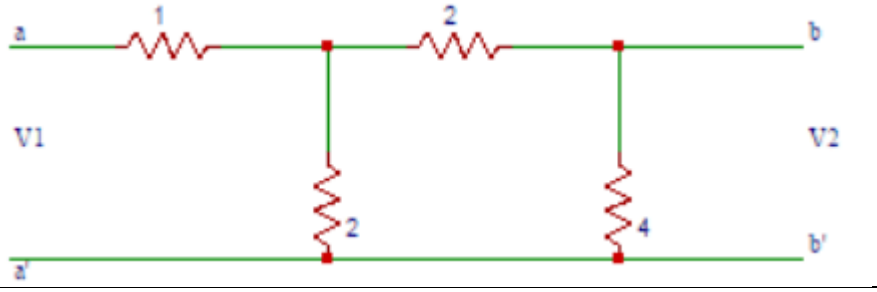
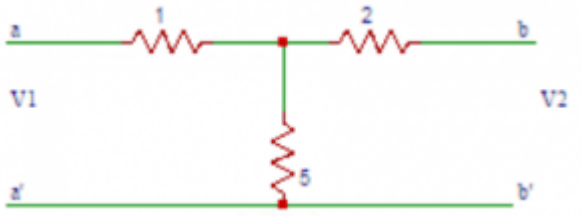
Q16.	Which of the following expression is true in case of open circuit parameters?
Option A:	$V_2 = Z_{21}I_2 + Z_{22}\ I_2$
Option B:	$V_2 = Z_{21}I_1 + Z_{22}\ I_2$
Option C:	$V_1 = Z_{21}I_2 + Z_{22}\ I_2$
Option D:	$V_1 = Z_{21}I_1 + Z_{22}\ I_2$
Q17.	Find the Z – parameter Z_{11} in the circuit shown below. 
Option A:	1
Option B:	1.5
Option C:	2
Option D:	2.5
Q18.	Which of the following expression is true in case of short circuit parameters?
Option A:	$I_2 = Y_{21}I_1 + Y_{22}\ I_2$
Option B:	$V_2 = Y_{21}I_1 + Y_{22}\ V_2$
Option C:	$I_2 = Y_{21}V_1 + Y_{22}\ V_2$
Option D:	$I_2 = Y_{21}V_1 + Y_{22}\ I_2$
Q19.	.In the circuit shown below, find the transmission parameter A. 
Option A:	6/5
Option B:	5/6
Option C:	¾
Option D:	4/3
Q20.	The hybrid parameter h_{21} is called?
Option A:	open circuit output admittance
Option B:	open circuit reverse voltage gain
Option C:	short circuit forward current gain
Option D:	short circuit input impedance
Q21.	For the given information $Z_{11} = 3$, $Z_{12} = 1$, $Z_{21} = 2$, $Z_{22} = 1$. Find the value of Y_{11}.
Option A:	1

Option B:	-1
Option C:	2
Option D:	-2
Q22.	The relation between Z_{22} and Y parameters is?
Option A:	$Z_{22} = (-Y_{11})/\Delta y$
Option B:	$Z_{22} = Y_{21}/\Delta y$
Option C:	$Z_{22} = (-Y_{21})/\Delta y$
Option D:	$Z_{22} = Y_{11}/\Delta y$
Q23.	The roots of the odd and even parts of a Hurwitz polynomial P (s) lie on _____
Option A:	right half of s plane
Option B:	left half of s-plane
Option C:	on jω axis
Option D:	on σ axis
Q24.	If the ratio of the polynomial P (s) and its derivative gives a continued fraction expansion with _____ coefficients, then the polynomial P (s) is Hurwitz.
Option A:	all negative
Option B:	all positive
Option C:	positive or negative
Option D:	positive or negative

Q25.	Which is this function. $Z(s) = \frac{(s+1)(s+3)}{s(s+2)}$ (a) LC function (b) RL function (c) RC function (d) RLC function.
Option A:	
Option B:	
Option C:	
Option D:	