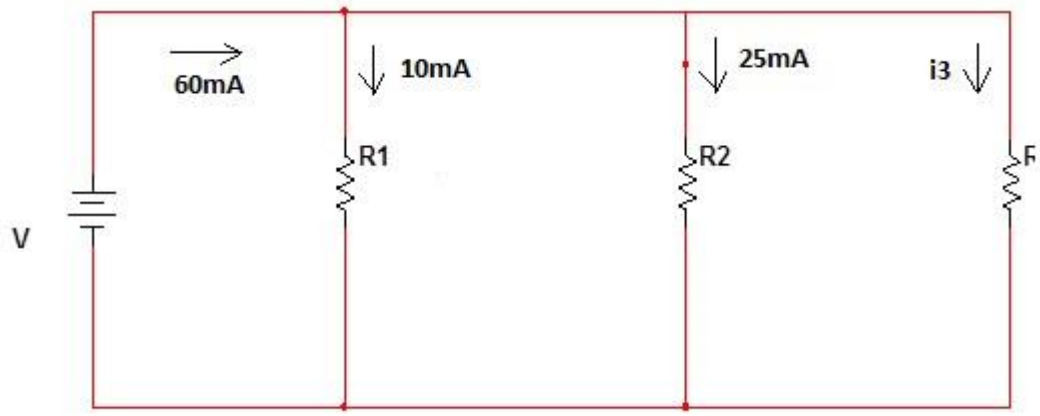
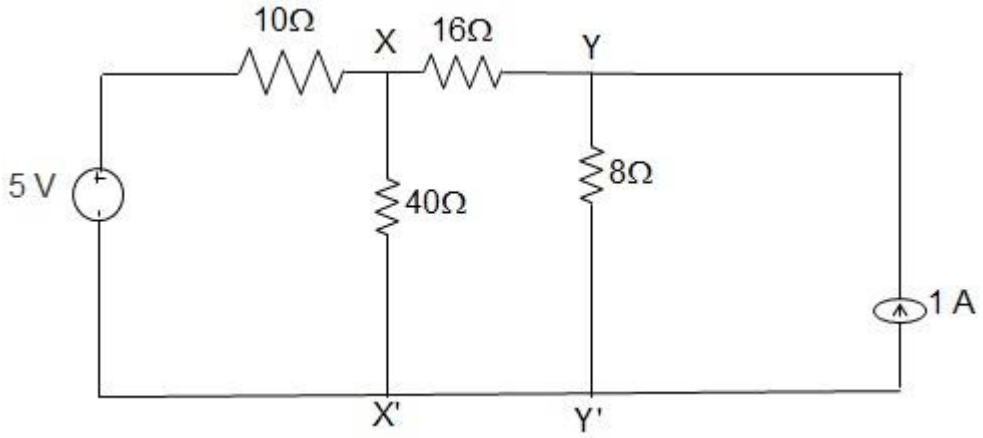
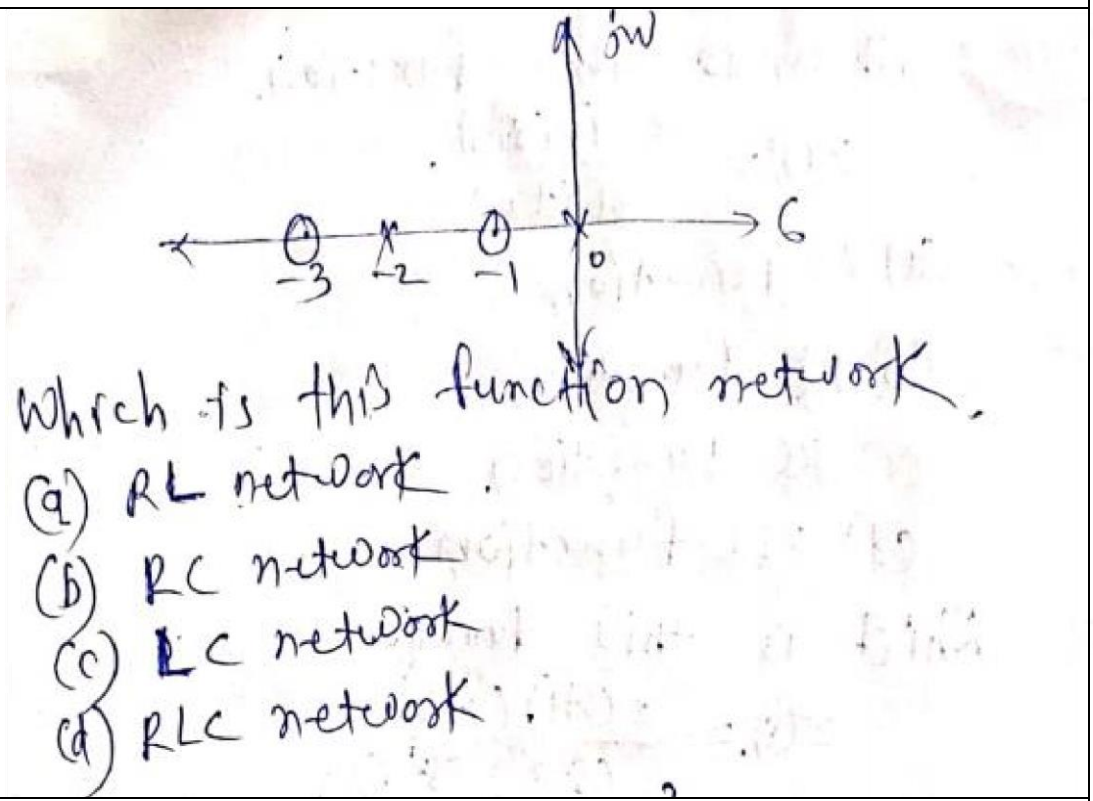
University of Mumbai

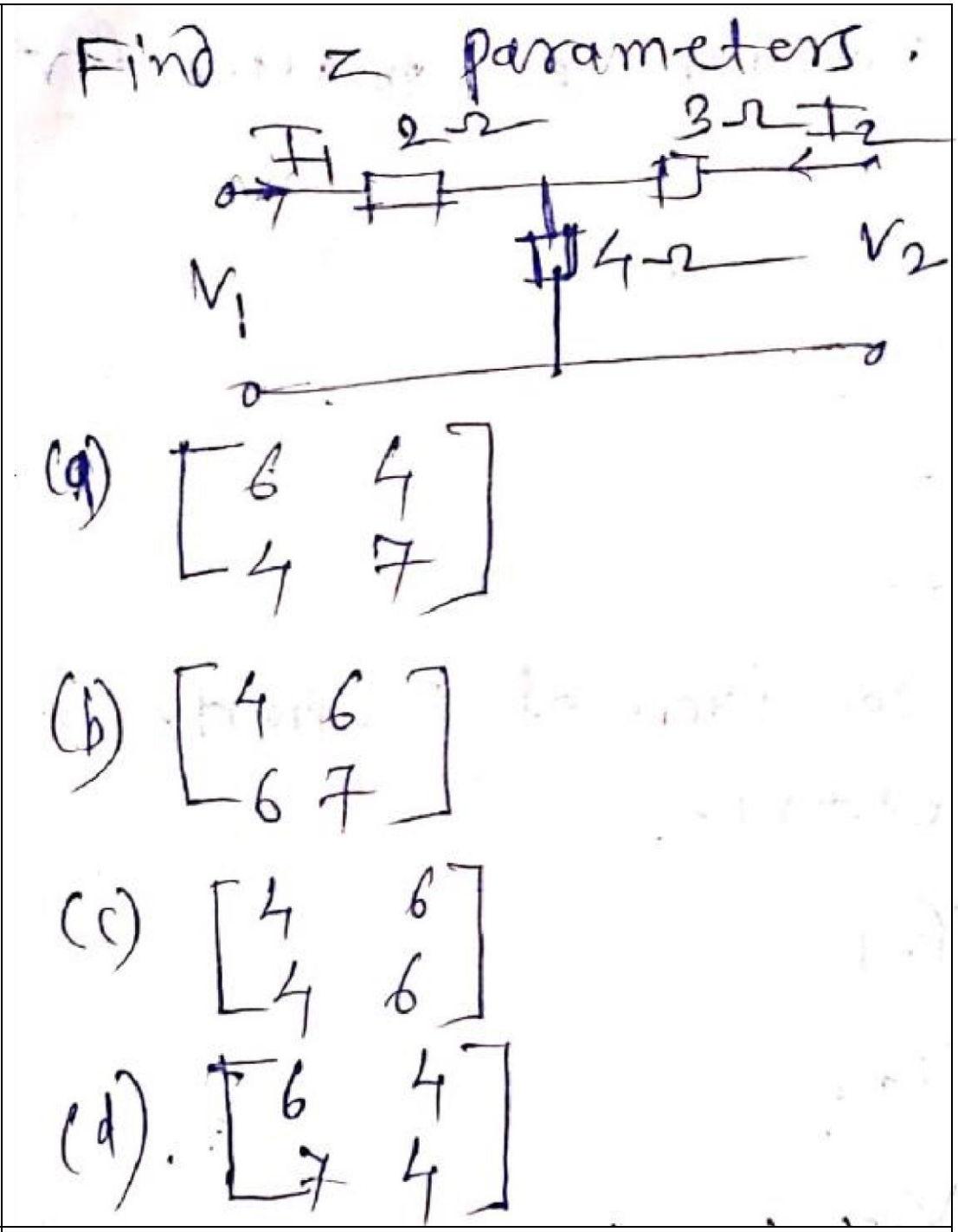
Sample Question paper

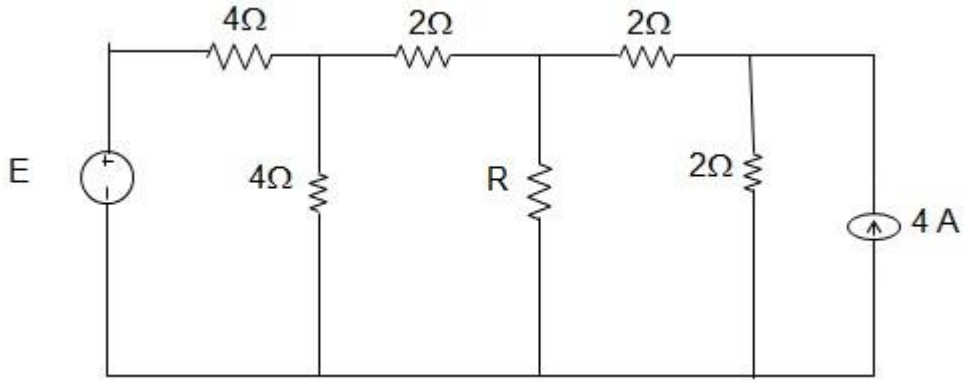
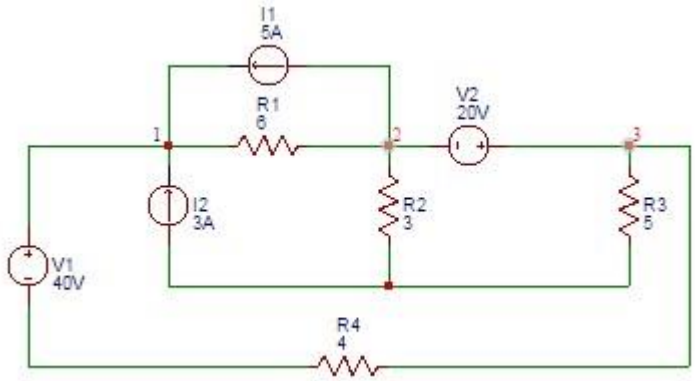
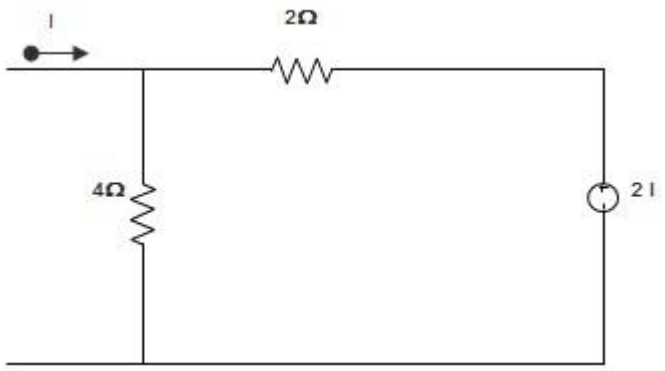
Program: **Electronics Engineering**
Curriculum Scheme: Rev2019
Examination: SE Semester III
Course Code: ELC304 and Course Name:ENAS

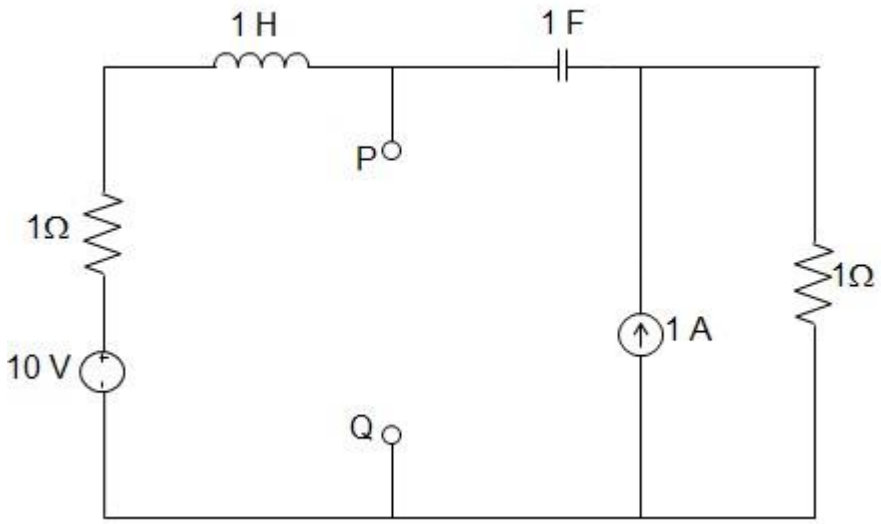
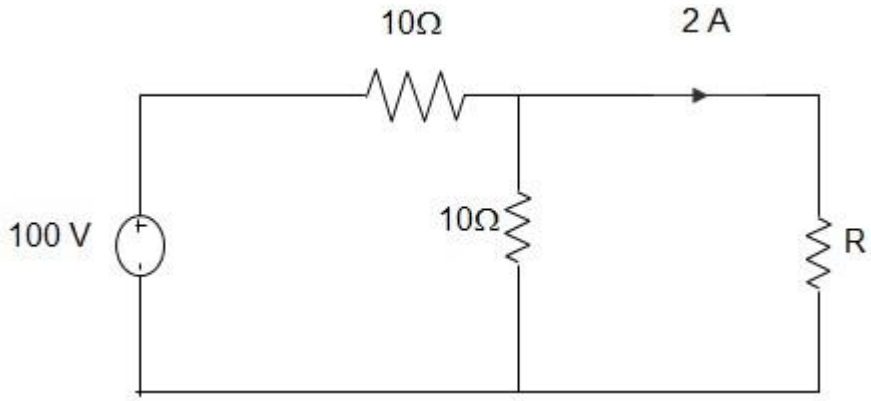
Time: 2 hour Max. Marks: 80

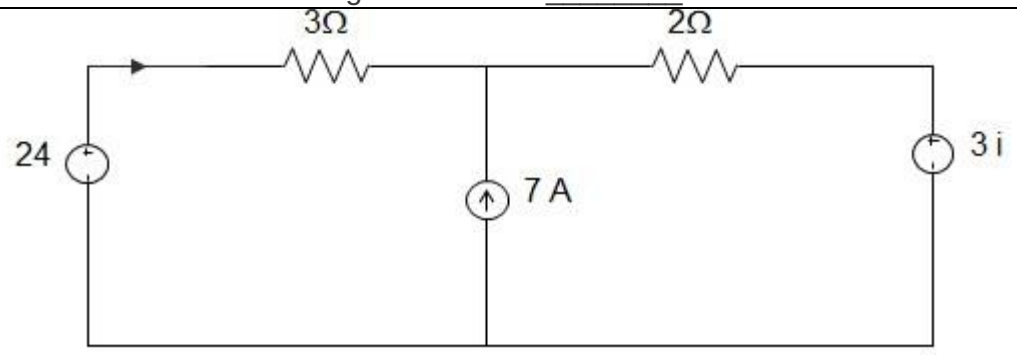
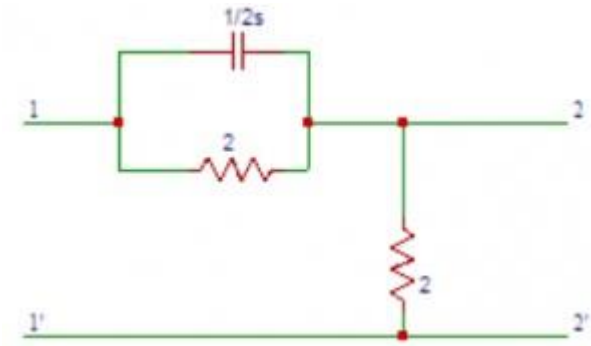
Q1. **(40 Marks)**	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
Q1.	Which is the condition of symmetry for h parameters
Option A:	h12 = -h21
Option B:	h11h22-h12h21 = 1
Option C:	h11h21-h12h22 = 1
Option D:	h11 = 22
Q2.	A 25 Ω resistor 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

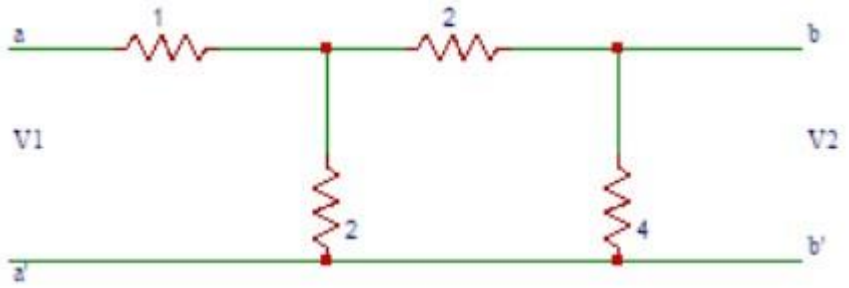
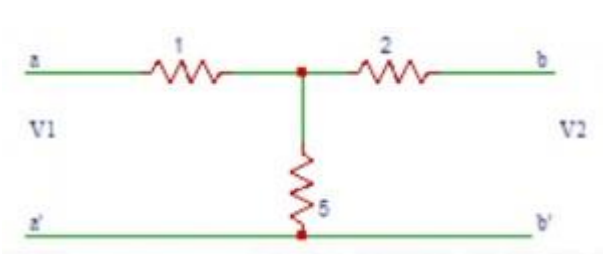
Option B:	10mA
Option C:	20mA
Option D:	35mA
Q4.	A circuit is given in the figure below. The Thevenin equivalent as viewed from terminals x and x' is _____
	
Option A:	8 V and 6 Ω
Option B:	5 V and 6 Ω
Option C:	5 V and 32 Ω
Option D:	8 V and 32 Ω
Q5.	
Option A:	
Option B:	
Option C:	
Option D:	

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?

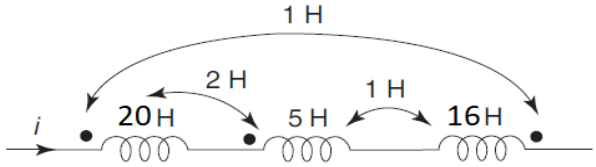
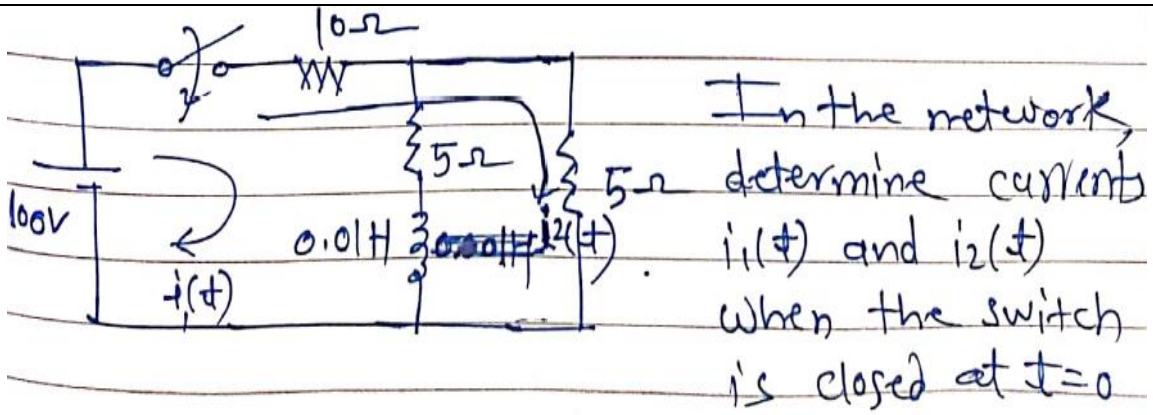
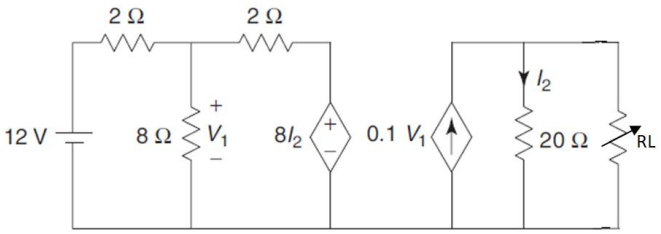
	
Option A:	50 W
Option B:	100 W
Option C:	200 W
Option D:	400 W
Q8.	 . Find the voltage (V) at node 3 in the figure shown below.
Option A:	18
Option B:	20
Option C:	22
Option D:	24
Q9.	 The circuit shown in figure has a load equivalent to _____
Option A:	4 Ω

Option B:	$\frac{3}{8}\Omega$
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

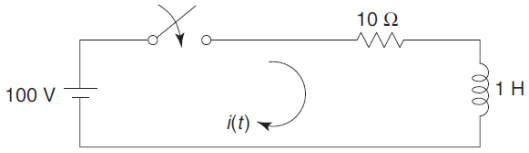
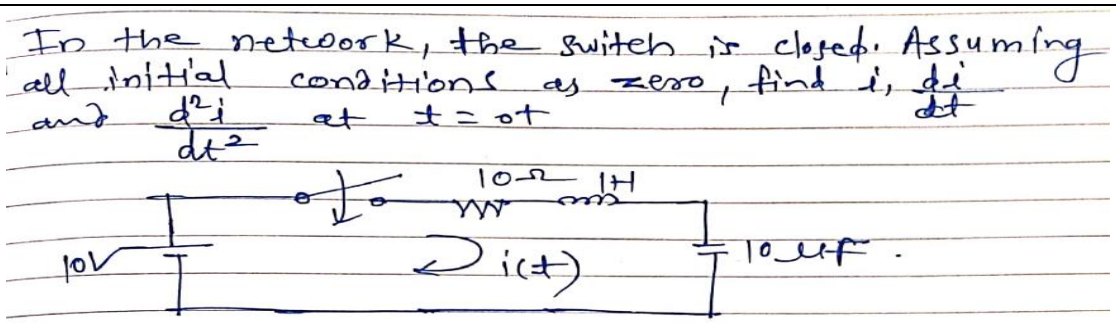
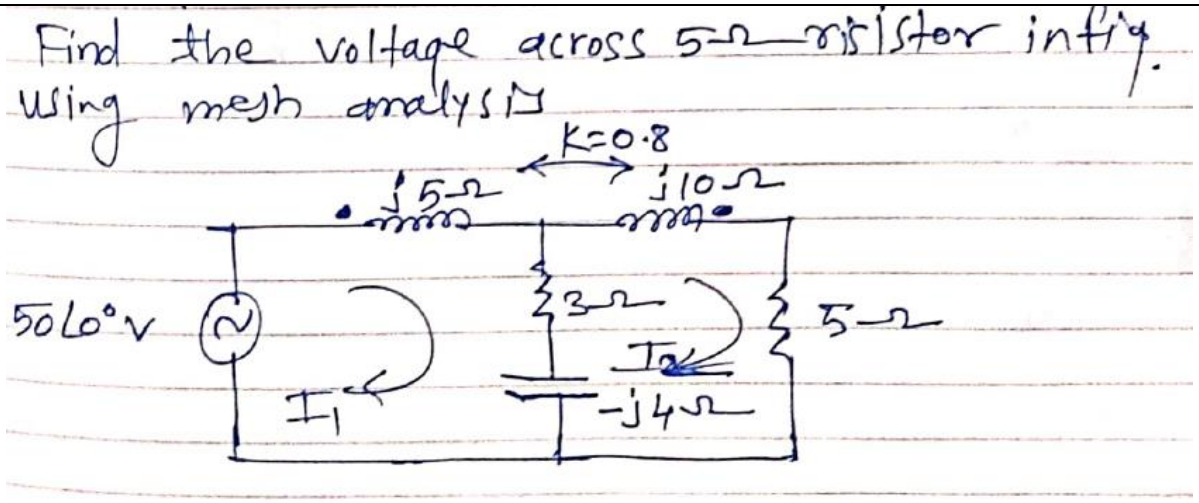
Q12.	The current I in the circuit given below is _____
	
Option A:	¼
Option B:	5/4
Option C:	¾
Option D:	1/2
Q13.	The unit step is not defined at t =?
Option A:	0
Option B:	1
Option C:	2
Q14.	For the network shown in the figure, find the driving point impedance. 
Option A:	$(s^2-2s+1)/s$
Option B:	$(s^2+2s+1)/s$
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)

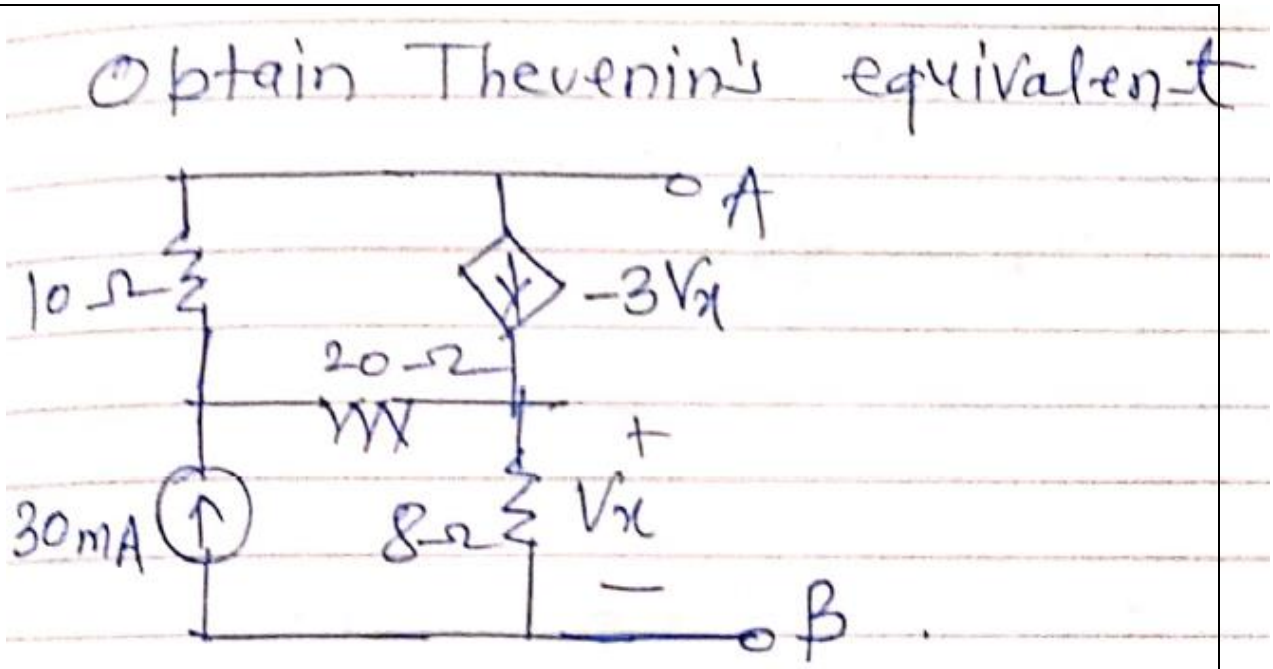
Option C:	(8 S+2)/(8 S+3)
Option D:	(8 S+2)/(8 S+4)
Q16.	Which of the following expression is true in case of open circuit parameters?
Option A:	$V_2 = Z_{21}I_2 + Z_{22}\ I_2$
Option B:	$V_2 = Z_{21}I_1 + Z_{22}\ I_2$
Option C:	$V_1 = Z_{21}I_2 + Z_{22}\ I_2$
Option D:	$V_1 = Z_{21}I_1 + Z_{22}\ I_2$
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
Option A:	1
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

Q2.	
A	**Solve any Two** **5 marks each**
i.	*Find the equivalent Inductance of the Network* 
ii.	Synthesis in Cauer II $Z(s) = \frac{(s+1)(s+3)}{s(s+2)}$
iii.	Synthesis in Cauer I $Z(s) = \frac{(s^2+1)(s^2+9)}{s(s^2+4)}$
B	**Solve any One 10 marks each**
i.	
ii.	*For the following circuit find Rth and hence calculate maximum power* 

Q	

3	
A	**Solve any Two 5 marks each**
i	*Test whether the polynomial P(s) is Hurwitz.* $P(s) = S^5 + S^3 + S$
ii	*For a given network the switch is closed at t=0. With zero initial current in the inductor find i, di/dt* 
iii	
B	
i	

ii	 Obtain Thevenin's equivalent A 10 Ω -3Vx 20 Ω + 30mA 8 Ω Vx — B