DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

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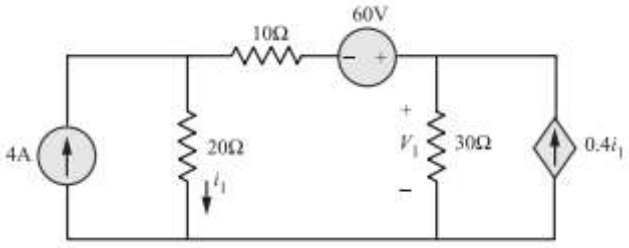
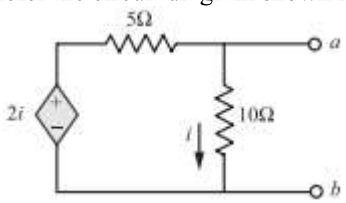
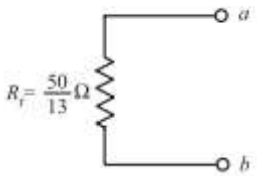
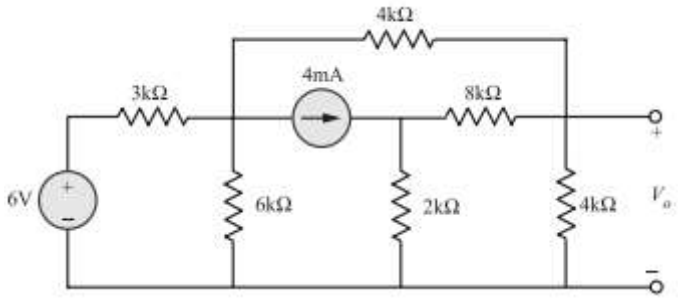
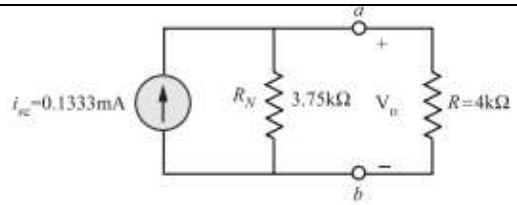
Tutorial 1B: Theorems

Sl. No.	Problems	Ans
1	Find the voltageV1 using the superposition principle. Refer the circuit shown in Fig. 	22.5 + 60 = 82.5
2	Find the Thevenin equivalent circuit as seen from the terminals a-b . Refer the circuit diagram shown in Fig. 	
3	Find Vo in the circuit of Fig. 	
4	Find the value of R_L for maximum power transfer. Also find the maximum power transferred to R_L	2KΩ, 12.5mW

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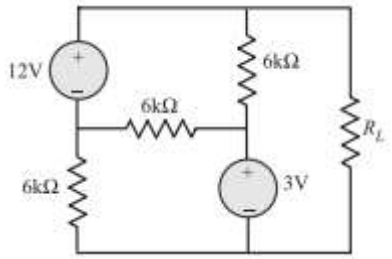
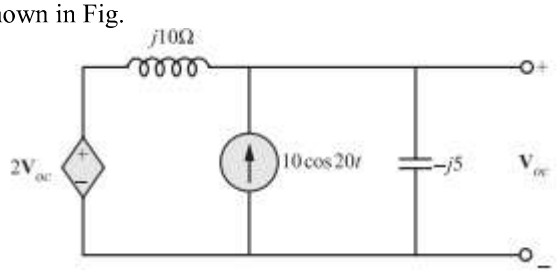
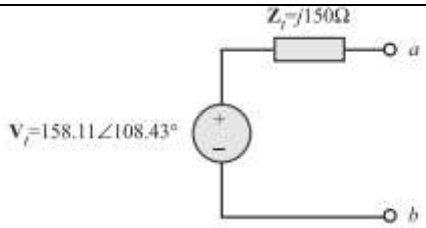
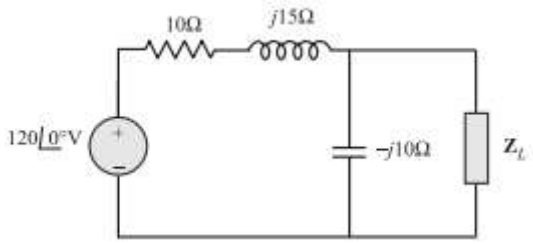
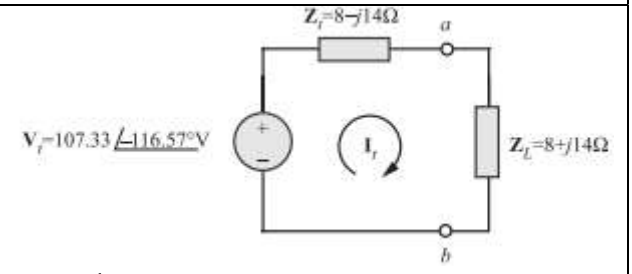
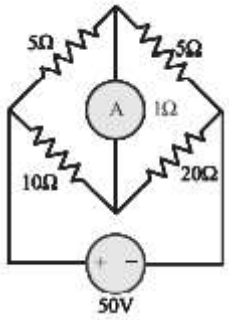
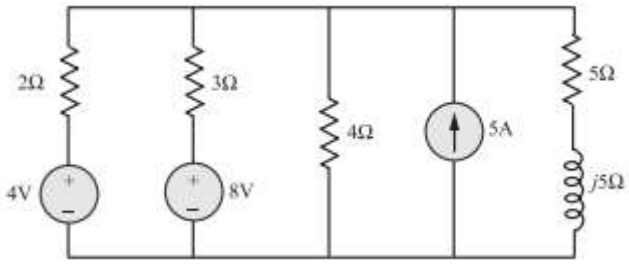
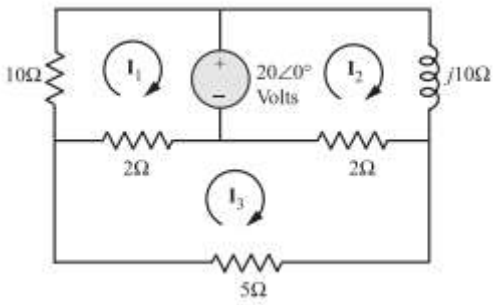
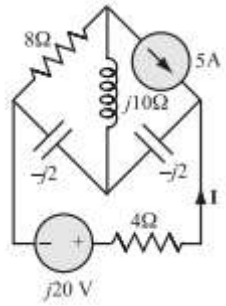
		
5	Find the Thevenin and Norton equivalent circuits for the circuit shown in Fig. 	 $\mathbf{I}_N = \frac{\mathbf{V}_t}{\mathbf{Z}_t} = \frac{158.11\ \angle 108.43^\circ}{150\ \angle 90^\circ} = 1.054\ \angle 18.43^\circ\ \text{A}$ $\mathbf{Z}_N = \mathbf{Z}_t = j150\ \Omega$
6	For the circuit, (a) what is the value of Z_L that will absorb the maximum average power? (b) what is the value of maximum power? 	 180 Walts
7	Refer the circuit shown in Fig. Find current through the ammeter, and hence verify reciprocity theorem 	0.8 A

8	Refer the circuit shown in Fig. Use Millman's theorem to find the current through (5+5j) Ω impedance 	8.9231V, 0.9231Ω, $1.15\angle -40.2^\circ$ A
9	Find current through 5 ohm resistor shown in Fig. and hence verify reciprocity theorem. 	$0.5376\angle -126.25^\circ$ A
10	For the network shown in Fig., apply superposition theorem and find the current I 	$6.1121\angle 144.78^\circ$ A