University of Information Technology & Sciences (UITS)

Faculty of Science and Engineering

Department of Computer Science and Engineering

Program: B.Sc. in CSE

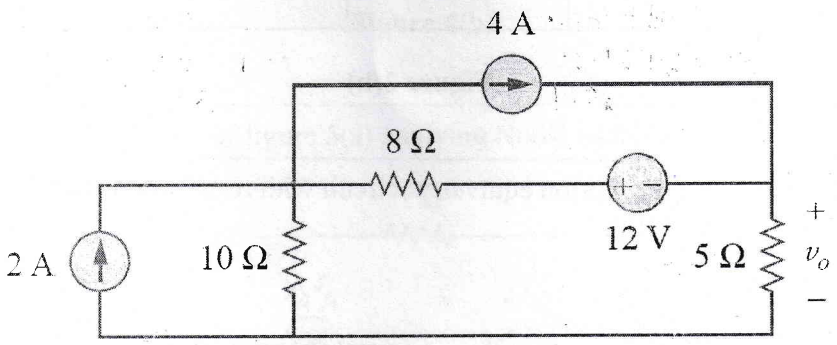
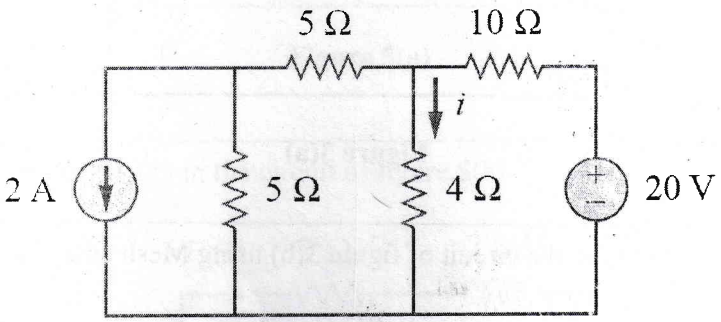
Term Final Examination, Spring 2025

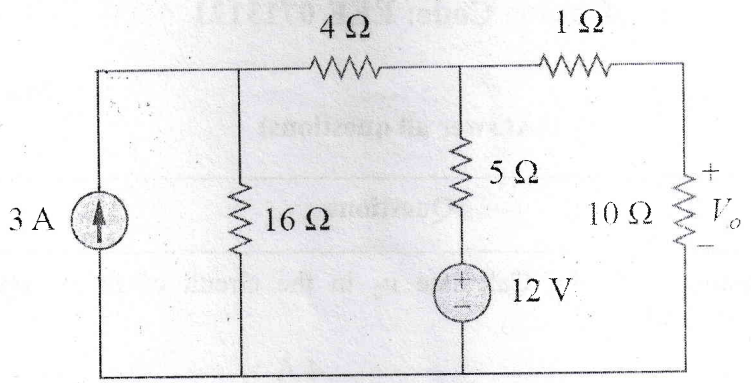
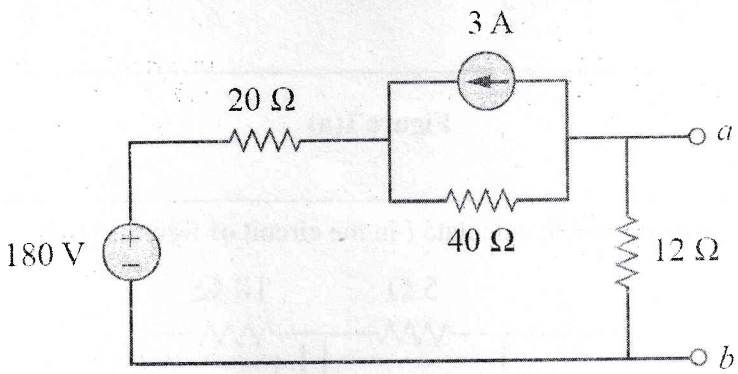
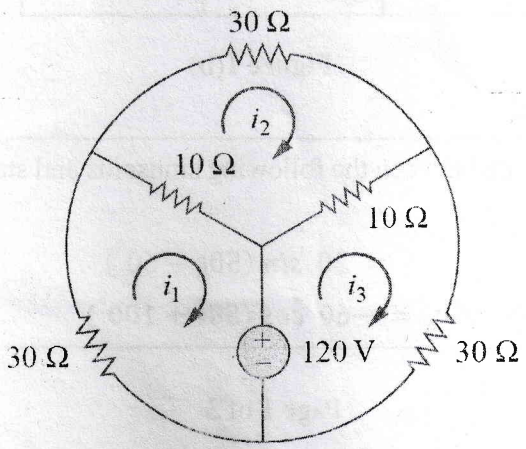
Course Title: Fundamental of Electrical Engineering

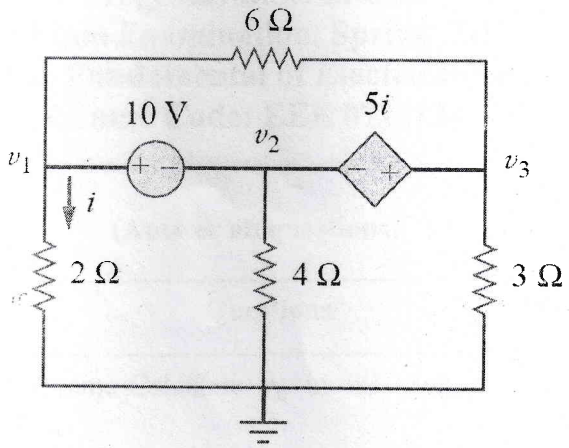
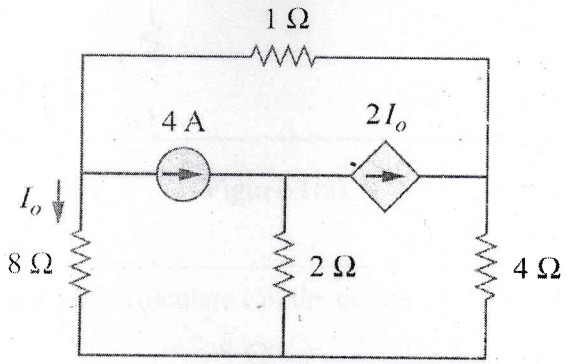
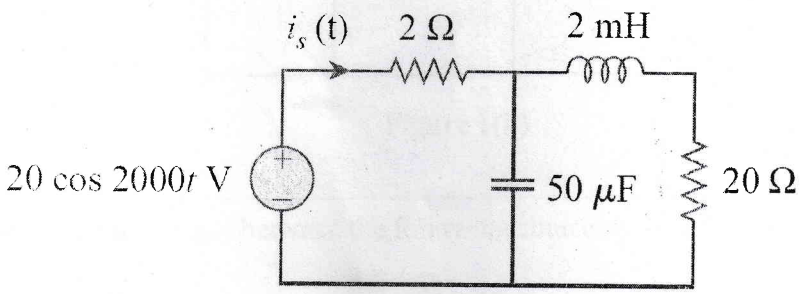
Course Code: EEE 0713121

Marks: 50 **Time: 3*(Three)* hours**

(Answer all questions)

Q. No.		Questions	Marks
1.	a)	State Superposition theorem. Calculate v_0 in the circuit of figure 1(a) applying Superposition principle.  **Figure 1(a)**	[05]
	b)	Use Source Transformation to calculate i in the circuit of figure 1(b).  **Figure 1(b)**	[05]
2.	a)	Compute the phase angle between the following sinusoids and state which one lags the other. $$v_1 = 20\ sin\ (50t + 60^\circ)$$ $$v_2 = -60\ cos\ (50t + 100^\circ)$$	[04]

	b)	State Thevenin's theorem. Apply Thevenin's theorem to compute V_0 in the circuit of figure 2(b).  **Figure 2(b)**	[06]
3.	a)	Analyze and illustrate the Norton equivalent circuit with respect to terminals a-b in the circuit shown in figure 3(a).  **Figure 3(a)**	[05]
	b)	Solve for i_1, i_2 and i_3 in the circuit of figure 3(b) using Mesh analysis.  **Figure 3(b)**	[05]

4.	a)	Evaluate the condition for maximum power transfer in a DC circuit.	[04]
	b)	Solve for v_1, v_2 and v_3 in the circuit of figure 4(b) using Nodal analysis.  **Figure 4(b)**	[06]
5.	a)	Calculate I_0 in the circuit of figure 5(a) applying Nodal analysis.  **Figure 5(a)**	[05]
	b)	Calculate the value of $i_s(t)$ in the circuit of figure 5(b).  **Figure 5(b)**	[05]

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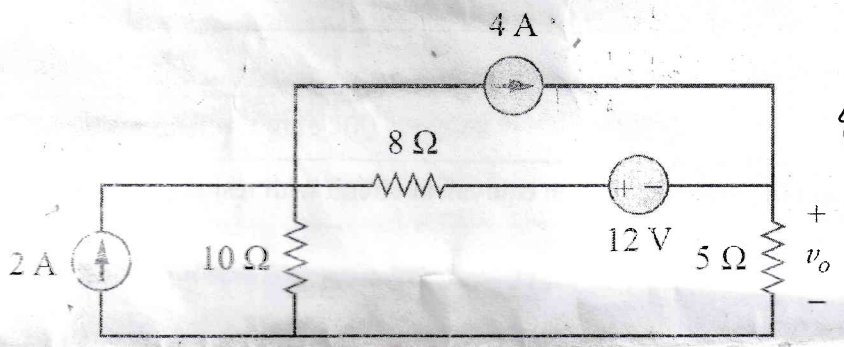
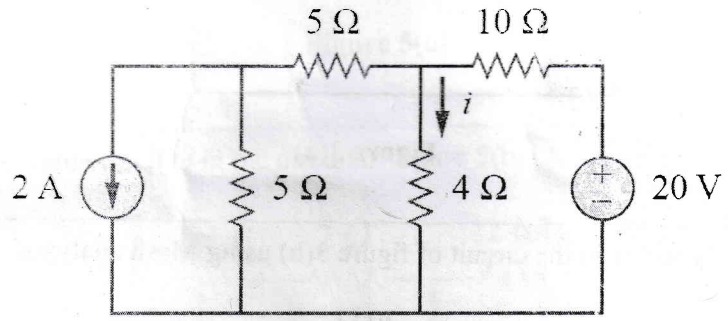
1.	a)	State Superposition theorem. Calculate v_0 in the circuit of figure 1(a) applying Superposition principle.  **Figure 1(a)**	[05]
	b)	Use Source Transformation to calculate i in the circuit of figure 1(b).  **Figure 1(b)**	[05]
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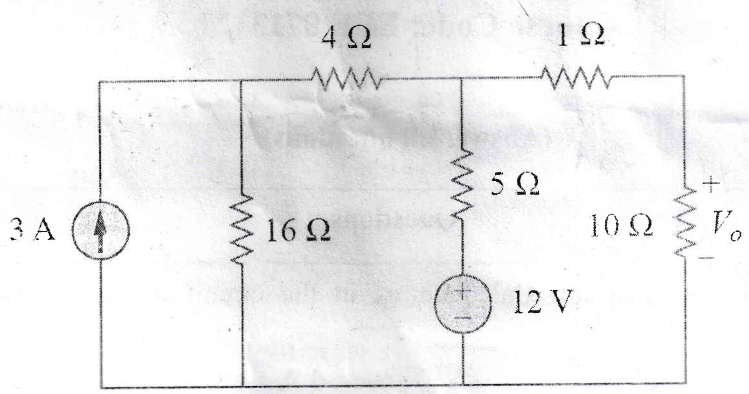

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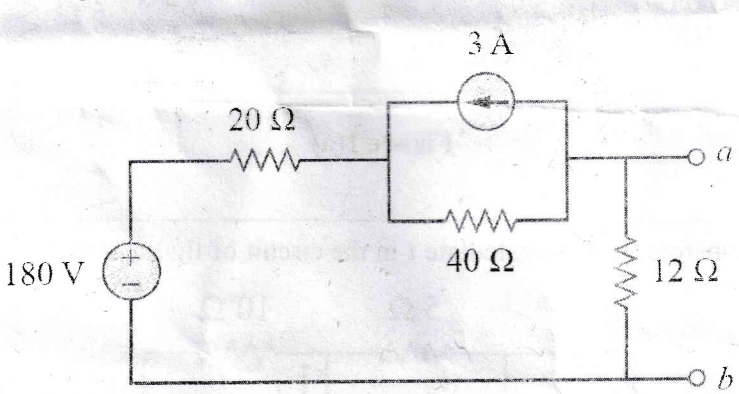

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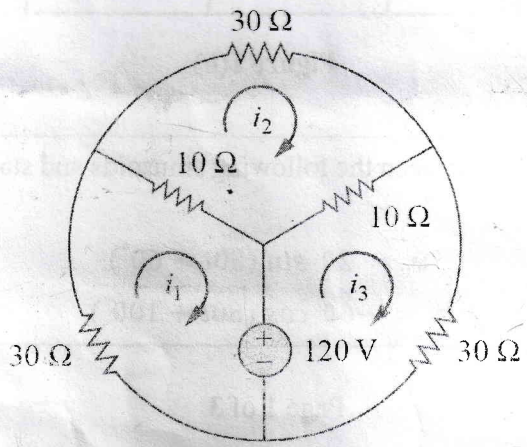
	b)	Solve for i_1, i_2 and i_3 in the circuit of figure 3(b) using Mesh analysis.	[05]



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4.	a)	Evaluate the condition for maximum power transfer in a DC circuit.	[04]
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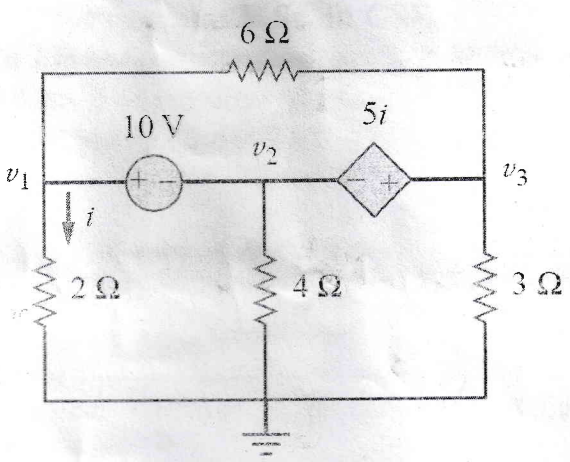
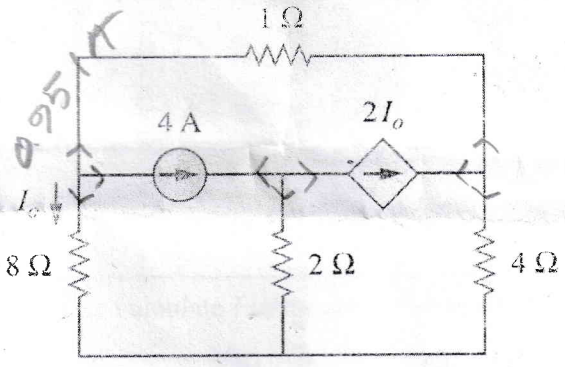


Figure 4(b)

5.	a)	Calculate I_0 in the circuit of figure 5(a) applying Nodal analysis.	[05]



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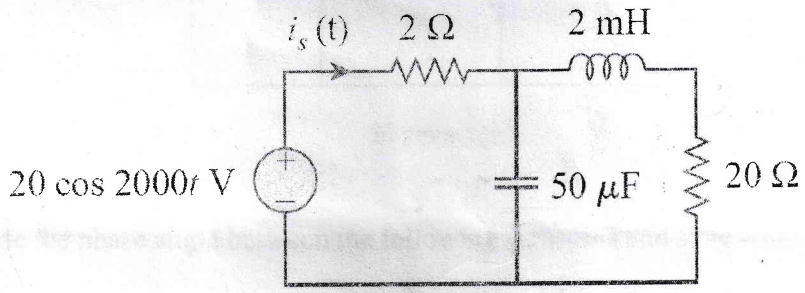

Figure 5(b)