

University of Information Technology & Sciences (UITS)
Faculty of Science and Engineering
Department of Computer Science & Engineering
Program: B.Sc. in CSE
Term Final Examination, Autumn 2024
Course Title: Fundamentals of Electrical Engineering
Course Code: EEE 0713241

Marks: 50

Time: 3(Three) hours

(Answer all questions)

Q. No.	Questions	Marks
1a	Determine I_o in the circuit of Figure 1(a) using Nodal analysis.	[4]

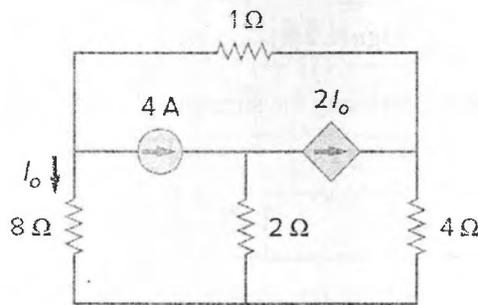


Figure 1(a)

1b	Using Thevenin's theorem, determine the equivalent circuit to the left of the terminals in the circuit of Figure 1(b). Then determine I in the circuit.	[6]
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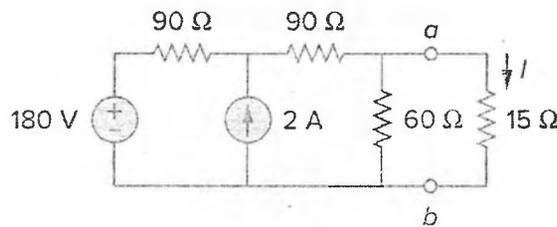


Figure 1(b)

2a	For the bridge network in figure 2(a), calculate i_o using Mesh analysis.	[4]
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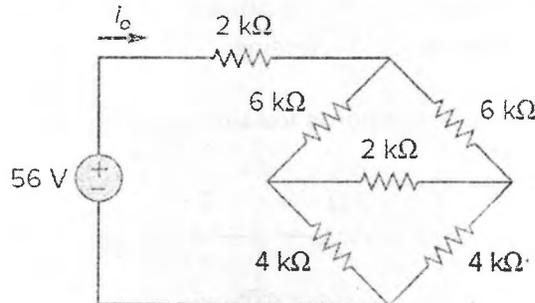


Figure 2(a)

2b Determine v_o and i_o in the circuit of Figure 2(b) using Mesh Analysis. [6]

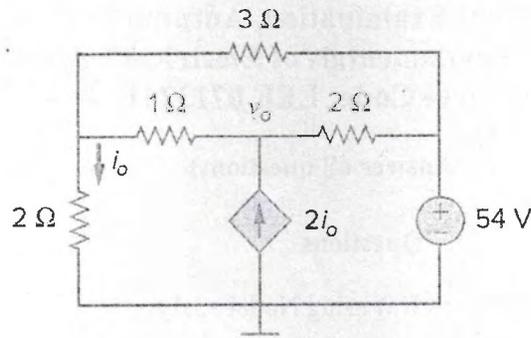


Figure 2(b)

3a Calculate I in the circuit of Figure 3(a) using the superposition principle. [5]

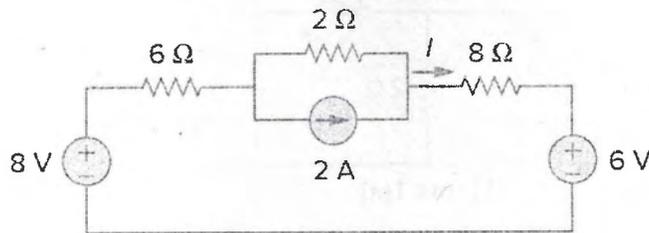


Figure 3(a)

3b Determine the Norton equivalent circuit for the circuit in Figure 3(b), at terminals a-b. [5]

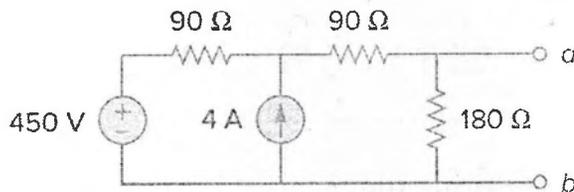


Figure 3(b)

4a Calculate the phase angle between $i_1 = -4 \sin(377t + 55^\circ)$ and $i_2 = 5 \cos(377t - 65^\circ)$. State which sinusoid is leading. [4]

4b Determine the value of R_L for maximum power transfer in the circuit of Figure 4(b). Calculate the maximum power. [6]

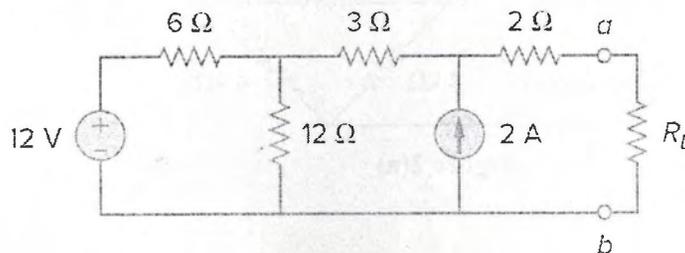


Figure 4(b)

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5a Use Source Transformation to calculate i_o in the circuit of Figure 5(a).

[4]

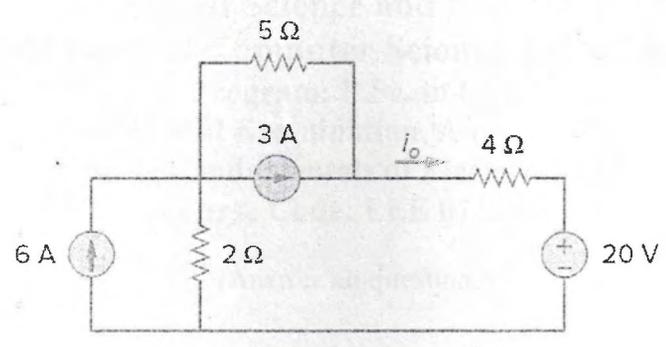


Figure 5(a)

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5b Calculate V_o in the circuit of Figure 5(b).

[6]

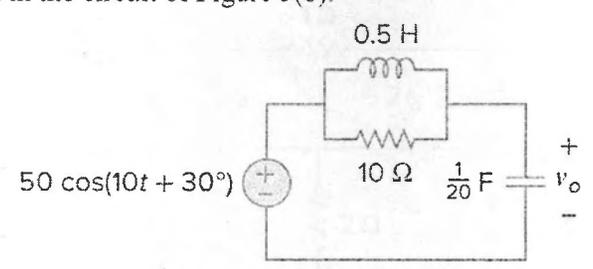


Figure 5(b)