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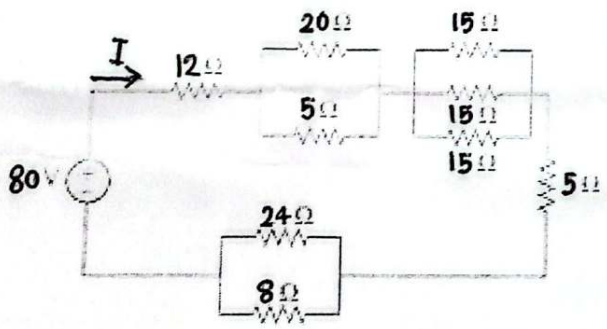
Daffodil International University
Faculty of Science & Information Technology
Department of Computer Science & Engineering
Midterm Examination, Summer 2026
Course Code: CSE121 Course Title: Electrical Circuits
Level: 1 Term: 3 Batch: 70
Time: 1:30 Hrs Full Marks: 25

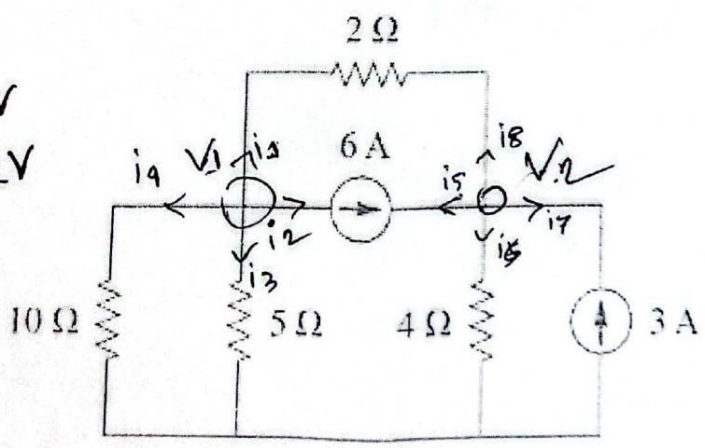
Answer all the following *Three* questions
[All portions of each question must be answered sequentially]

Q1.	*a.*	List the active and passive elements of electrical circuits.	5x1 =5	CO1
	b.	Draw the short circuit and open circuit diagrams and indicate the values of V, I, and R.		
	c.	Draw the symbols of dependent voltage and current sources used in DC circuits.		
	d.	State the conditions for series and parallel circuits.		
	e.	Write a short note on Norton's Theorem.		
Q2.	*a.*	Solve for the equivalent resistance and the total current, *I* in the following circuit :	2x5 =10	CO2
	b.	Apply nodal analysis to determine the node voltages in the following circuit :		

$R_T = 32\,\Omega$
$I = 2.5\,A$



$V_1 = 0V$
$V_2 = 12V$



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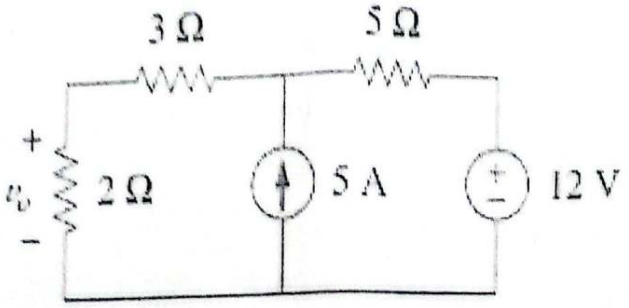
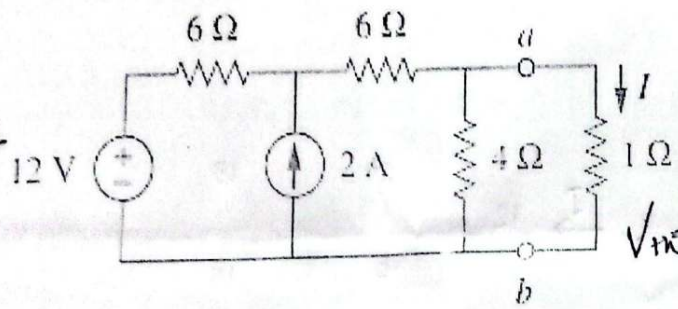
Q3.	*a.*	Analyze the following circuit using the superposition theorem by determining the contribution of each independent source separately and hence finding the output voltage, v_o : $V_o = 7.4V$  	2x5 =10	CO3
	b.	Analyze the circuit using Thevenin's theorem by obtaining the Thevenin equivalent circuit and hence determining the value of the current, I in the following circuit : $V_{th} = 6V$ $R_{th} = 3\Omega$ $I = 1.5A$  $R_{th} = 3\Omega$ $V_{th} = 6V$ $I = 1.5A$		

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