



# Daffodil International University

Faculty of Science & Information Technology

Department of Computer Science & Engineering

Midterm Examination, Fall 2025

Course Code: CSE 121 , Course Title: Electrical Circuits

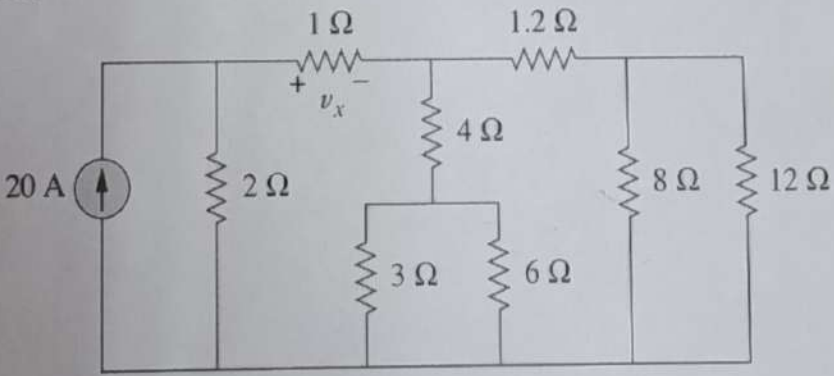
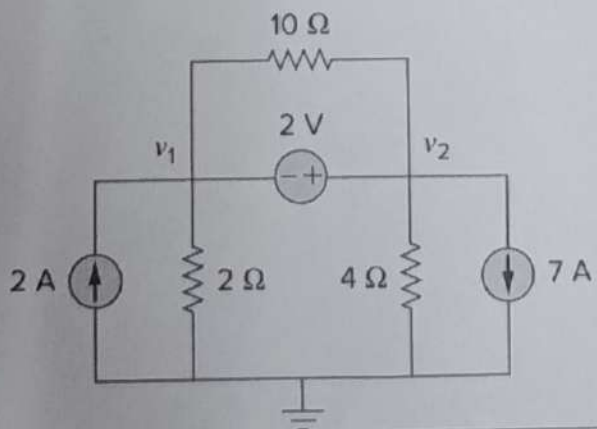
Level:1 Term:3 Batch: 68

Time: 01:30 Hrs

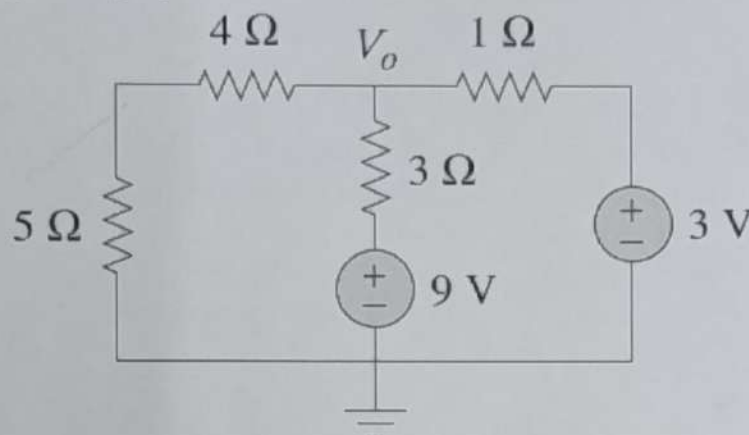
Marks: 25

## Answer ALL Questions [Optional]

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	a)	What is node and branch?	5×1=5	CO1
	b)	If the length of a conductor is doubled and its radius is reduced to half of its original value, <b>what</b> will be its new resistance?		
	c)	Define open and short circuit.		
	d)	How does temperature affect conductors and semiconductors?		
	e)	Explain the concept of a supernode in circuit analysis.		
2.	a)	Solve the following circuit to determine $v_x$ and the power absorbed by the $2\Omega$ resistor. 	5	CO2
	b)	Solve the following circuit using nodal analysis to identify node voltages. 		

3. a) Examine the following circuit to determine the current through the  $3\ \Omega$  resistor using the superposition theorem.



- b) Analyze the following circuits to-

- Determine the Thevenin equivalent resistance at terminals a-b.
- Find  $R_L$  for maximum power deliverable to  $R_L$ . *22V, 13.44W*
- Determine that maximum power.

