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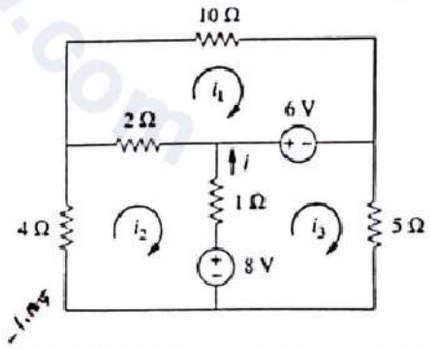
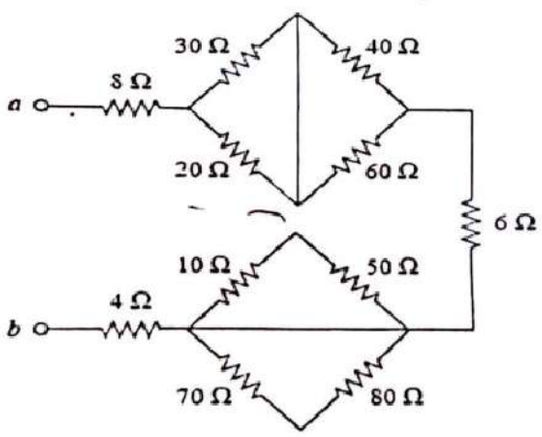
Daffodil International University

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Midterm Examination, Summer-2025
Course Code: CSE121, Course Title: Electrical Circuits
Level: 1 Term: 3 Batch: 67

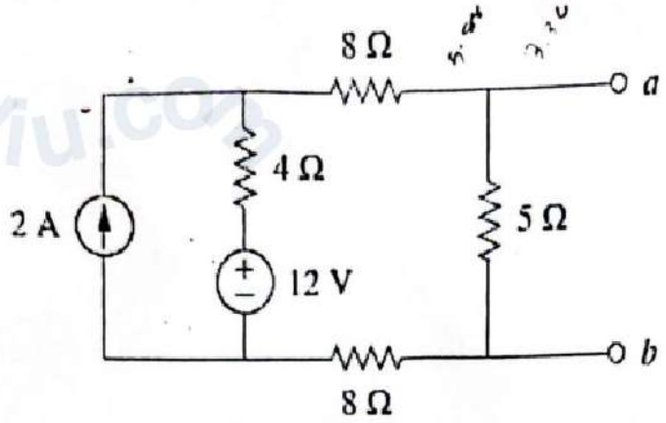
Time: 1 Hour and 30 Minutes **Marks: 25**

Answer ALL Questions

[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)	Define the terms 'KVL & KCL.	5×1=5	CO1
	b)	State the term 'Superposition Theorem.		
	c)	Illustrate the Norton equivalent circuit.		
	d)	What do you mean by Current Divider Rule (CDR)?		
	e)	What are the factors on which the resistance of a material depends?		
2.	a)	Solve the following circuit using mesh analysis to obtain i in the circuit below. 	2×5=10	CO2
	b)	Solve the following circuit to determine the equivalent resistance. 		

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3.	a)	**Examine** the following circuit to obtain the Thevenin equivalent circuit at terminals a-b. 	2×5=10	CO3
	b)	You are designing a fast-charging phone adapter with a 5V (Vs) output and an internal resistance (Rs) of 0.2 Ω. To achieve **maximum power transfer** for the fastest charging **Analize** the follwing: 1. What should be the **load resistance (RL)** of the smartphone's charging circuit? 2. Calculate the **maximum power (Pmax)** delivered to the phone. 3. If the phone's actual resistance is **0.3 Ω**, is the charger operating at peak efficiency? If not, how can you adjust the design to improve power transfer?		