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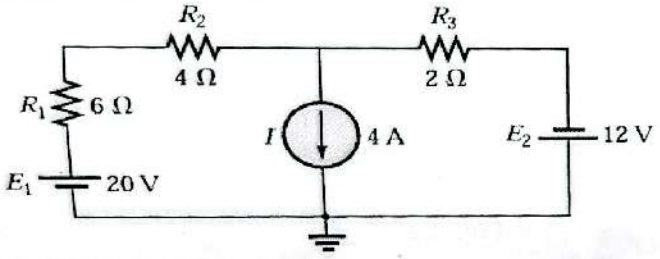
Daffodil International University

Department of Textile Engineering (TE)
Faculty of Engineering
Final Examination, Spring-2026

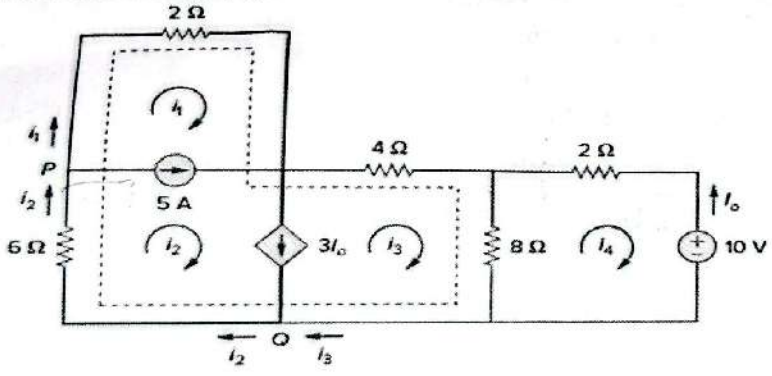
Course Code: 0713-221 **Course Title: Basic Electrical and Electronic Engineering**
Level & Term: L2T2 **Full Marks: 40, Time: 2 Hours**
Course Teacher: Tasnia Noshin Orin (TNO), Amit Kumar Paul (AKP), Sakaid Hosain Shakir(SHS)

(Answer any 5 set of the following Questions)

1. a. Explain whether you can apply mesh analysis for the given circuit or not and find the currents. **[CLO-2, C2,C1]** **[4+4]**

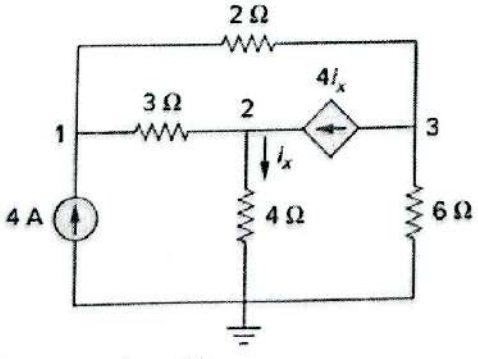


b. Find current i_1, i_2, i_3, i_4



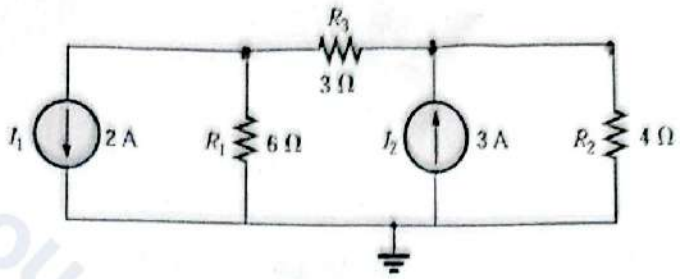
2. a. List steps to determine node voltages. **[CLO-2, C1,C5, C2]** **[2+3+ 3]**

b. Determine node voltages at three non-reference nodes.



c. Calculate the unknown node voltages.

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3. a. Define: Zenner breakdown, Avalanche breakdown. [CLO-4 C1, C2, C3] [2+4+2]
b. Explain V-I characteristics curve of PN junction diode with proper diagram.
c. Suppose you have a silicon diode with a reverse saturation current (1.5×10^{-12}A). Calculate the diode current if the knee voltage is 0.67V and n=1.5 at room temperature?

4. a. Determine the current Io of the following circuit 4.1 [CLO-2, CLO-3, C5] [4+4]

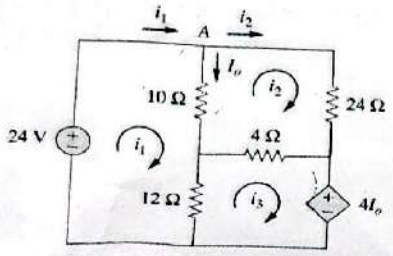


Fig: 4.1

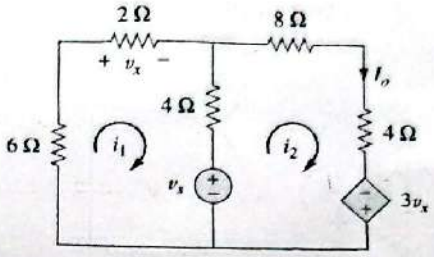
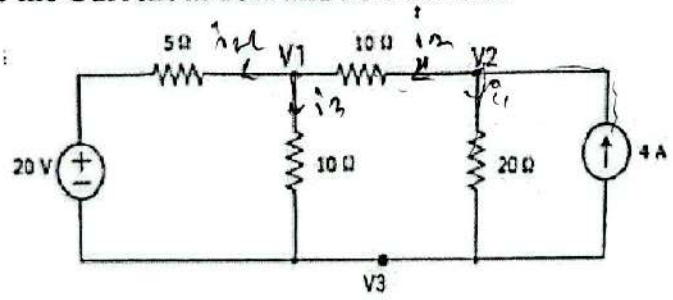


Fig: 4.2

b. For the following circuit 4.2 find I_o when V_s=12V & V_s=24V and determine whether the circuit is linear or not.

5. a. Determine V1 and V2 using Nodal analysis. [CLO-3, C5,C1] [4+4]
b. Calculate the Current at 10Ω and 20Ω resistor.



6 a. Identify the value of I_1 and I_2 when the 120 V source is deactivated. [CLO-3, C1,C5] [4+4]
b. Determine I_1 when the two voltage sources are both active in the circuit.

