

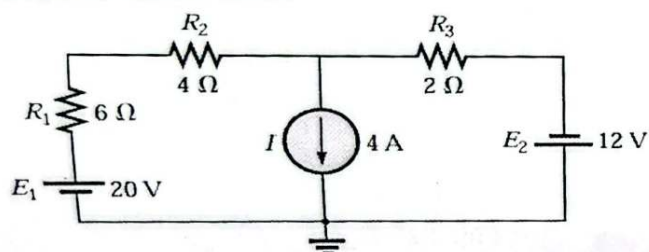


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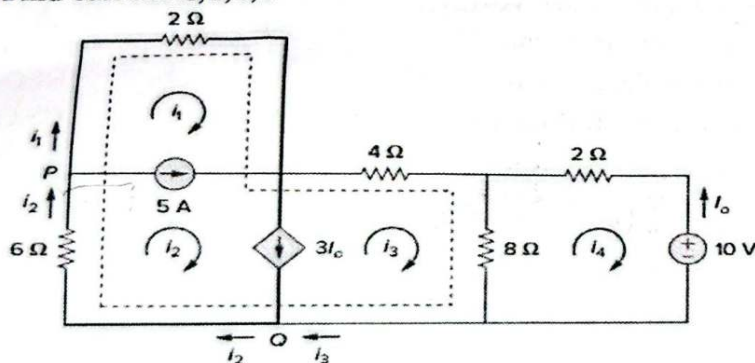
Department of Textile Engineering (TE)
Faculty of Engineering
Final Examination, Spring-2026

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, [4+4] C2,C1]

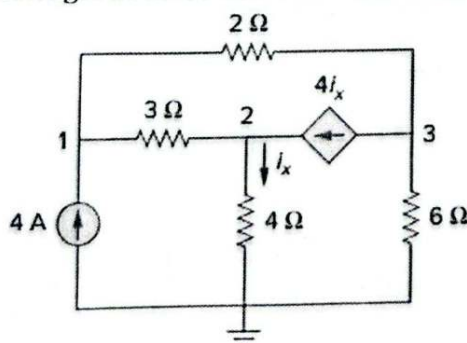


b. Find current i_1, i_2, i_3, i_4

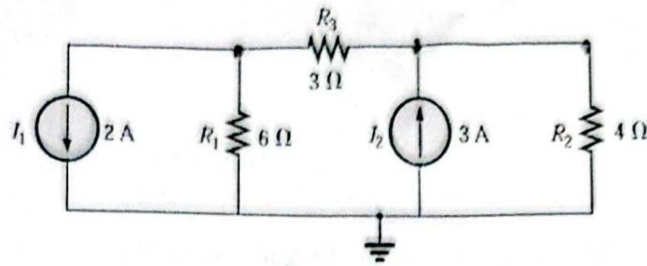


2. a. List steps to determine node voltages.
b. Determine node voltages at three non-reference nodes.

[CLO-2, [2+3+ C1,C5, 3] C2]



- c. Calculate the unknown node voltages.



3. a. Define: Zenner breakdown, Avalanche breakdown. [CLO-4 [2+4+
b. Explain V-I characteristics curve of PN junction diode with proper C1, C2, 2]
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? C3]

4. a. Determine the current I_o of the following circuit 4.1

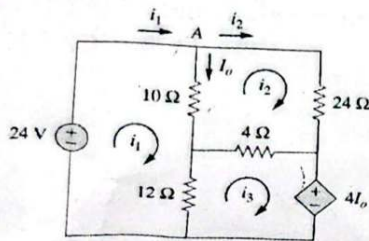


Fig: 4.1

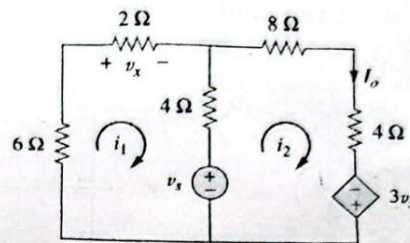
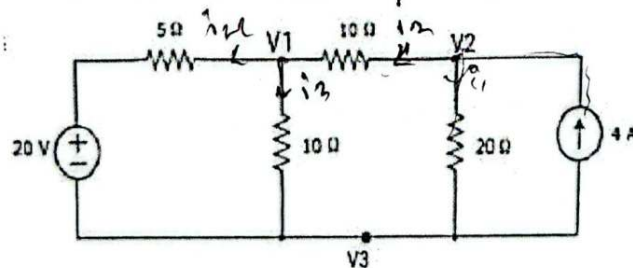


Fig: 4.2

- 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 V_1 and V_2 using Nodal analysis. [CLO-3, [4+4]
b. Calculate the Current at 10 ohm and 20 ohm resistor. C5, C1]



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

