

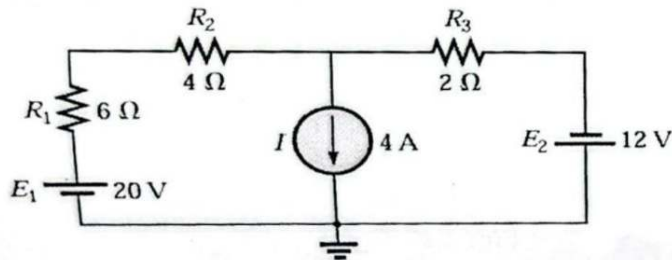


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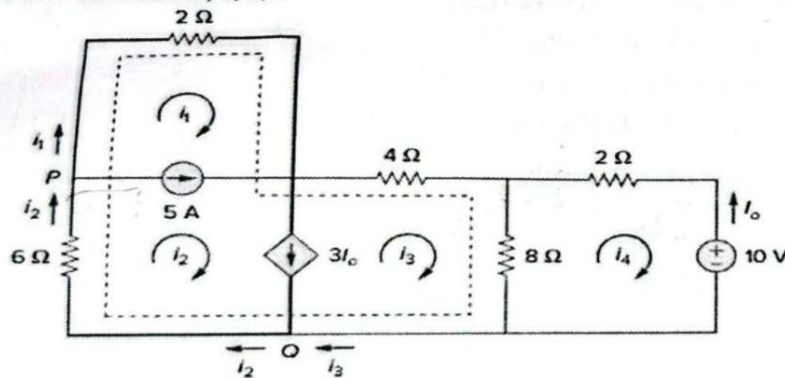
Department of Textile Engineering (TE)
Faculty of Engineering
Final Examination, Spring-2026

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 [CLO-2, [4+4]
and find the currents. C2,C1]

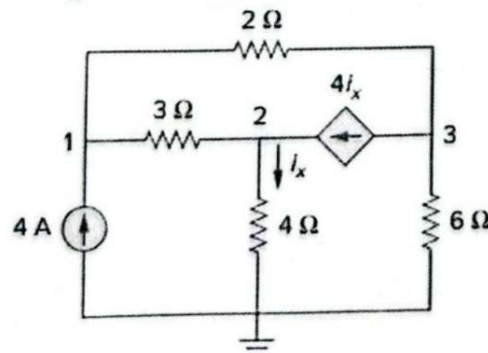


- b. Find current i_1, i_2, i_3, i_4

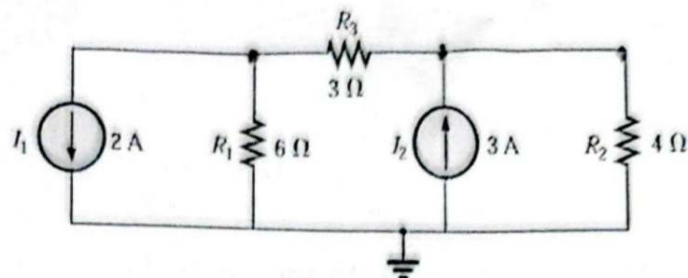


2. a. List steps to determine node voltages.
b. Determine node voltages at three non-reference nodes.

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



- c. Calculate the unknown node voltages.



3. a. Define: Zener breakdown, Avalanche breakdown.
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?

[CLO-4 [2+4+
C1, C2, 2]
C3]

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

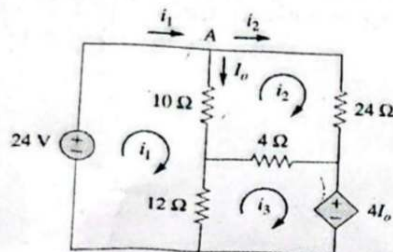


Fig: 4.1

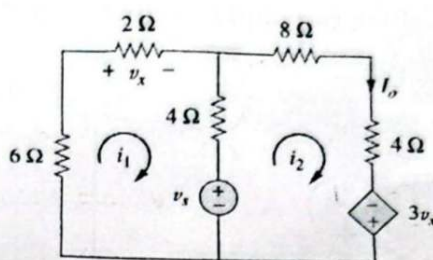


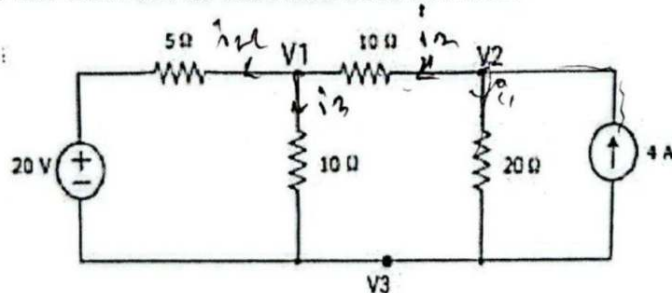
Fig: 4.2

[CLO-2, [4+4]
CLO-3,
C5]

- 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.
b. Calculate the Current at 10 ohm and 20 ohm resistor.

[CLO-3, [4+4]
C5, C1]



6. a. Identify the value of I_1 and I_2 when the 120 V source is deactivated.
b. Determine I_1 when the two voltage sources are both active in the circuit.

[CLO-3, [4+4]
C1, C5]

