



United International University

Department of Computer Science and Engineering

EEE 2113: Electrical Circuit

Mid-Term Exam: Summer 2022 Time: 1 hour 45 minutes Marks: 30

There are five questions here. Answer all of them

1. Calculate the currents through all the resistors using mesh analysis method and find v_o . [6]

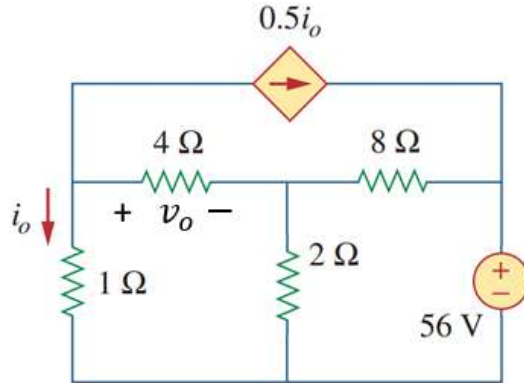


Figure 1: Circuit diagram for Q-1

2. (a) Find v_0 in the following circuit using nodal analysis method. [5]
 (b) Also find the power absorbed or supplied by the “4A current source”. [1]

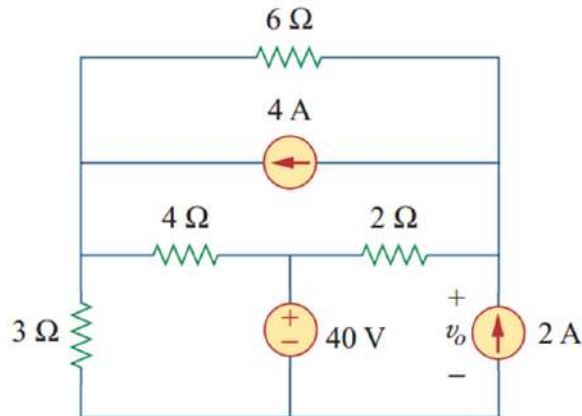


Figure 2: Circuit diagram for Q-2

3. The voltage across a device (in V unit) and the current through it (in A unit) are

$$v(t) = 5\cos(2t)$$

$$i(t) = 10(1 - e^{-0.5t})$$

Question 3 continued....

- (a) Find the charge passing through the device at the instant of $t = 2s$ assuming initially uncharged condition. [4]
- (b) Calculate the absorbed or supplied energy of the device upto $t = 5s$. [2]

4. For the following circuit, determine

- (a) The current i_4 and i_5 using current divider rule. [2]
- (b) Find the value of i_1 using the value of i_3 . [2]
- (c) The value of the voltage source, V_s . [2]

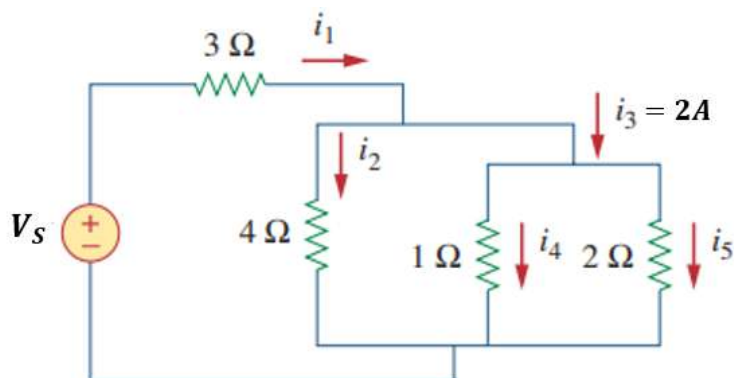


Figure 3: Circuit diagram for Q-4

5. Determine the following circuit parameters for the circuit shown below:

- (a) Equivalent resistance between the a-b nodes. [3]
- (b) The current i_0 and i_1 in the circuit. [3]

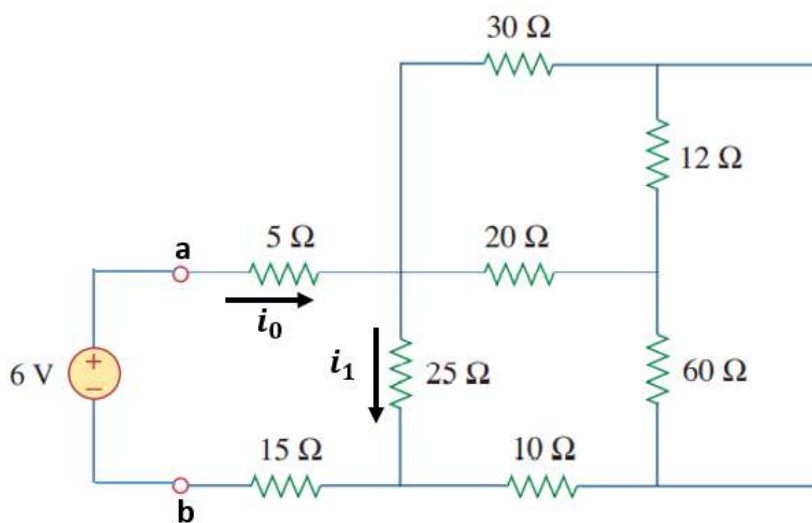


Figure 4: Circuit diagram for Q-5