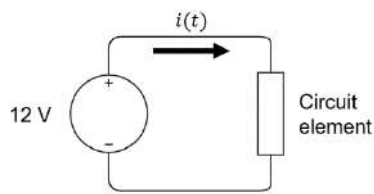


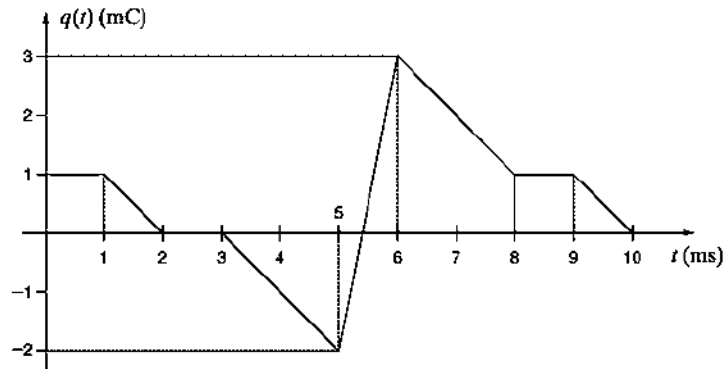
**Question 1:**

A circuit element is connected to a voltage source as shown in **Figure 1a**. The charge entering through this element is shown in **Figure 1b**. Now, answer the following questions:

- i) Calculate and sketch the current flowing into this element between 0 to 10 ms.
- ii) Calculate and sketch the power of this element between 0 to 10 ms. Determine at which time intervals the power is absorbed and power is delivered.



**Figure 1a**

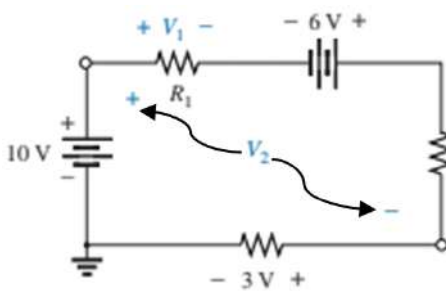


**Figure 1b**

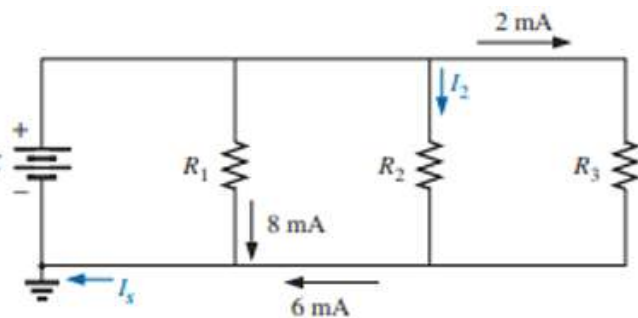
**Question 2:**

Answer the following questions for the circuits shown in **Figure 2(a-b)**:

- iii) Determine the voltages  $V_1$  and  $V_2$  using KVL.
- iv) Determine the currents  $I_2$  and  $I_5$  using KCL.



**Figure 2a**



**Figure 2b**

**Question 3:**

Determine the following for the circuit shown in **Figure 3**:

- i) Equivalent Resistance,  $R_{ab}$  for this circuit.
- ii) Current  $V_1$ ,  $I_1$  and  $I_2$  using CDR, VDR.

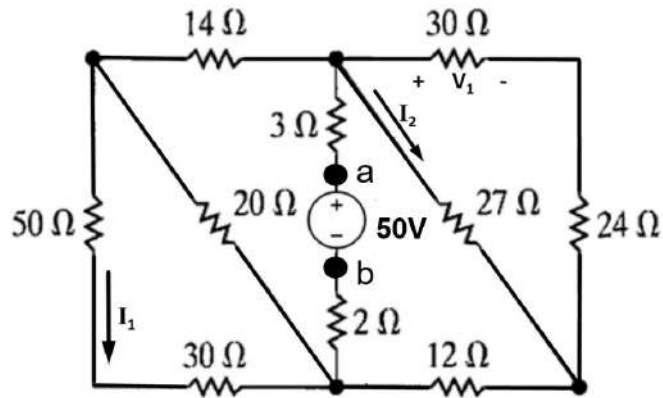


Figure 3

**Question 4:**

Answer the following questions for the circuit shown in **Figure 4 (a-b)**:

- i) Use the mesh analysis method to determine the mesh currents and the value of  $i_\phi$  in the **Figure 4a** circuit.
- ii) Using nodal analysis in **Figure 4b**, find the value of  $I_o$ .

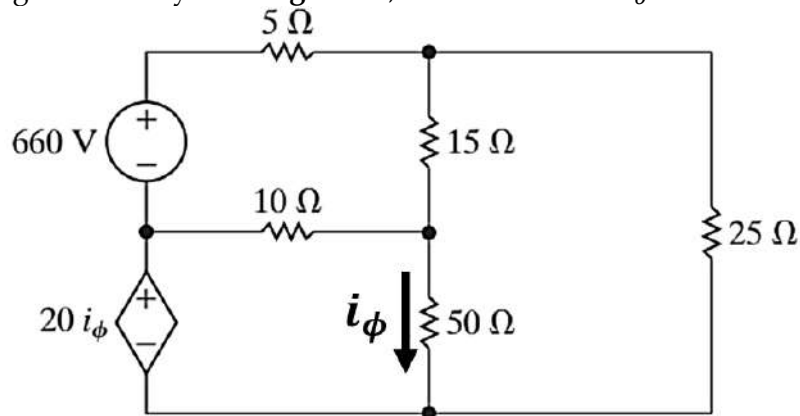


Figure 4a.

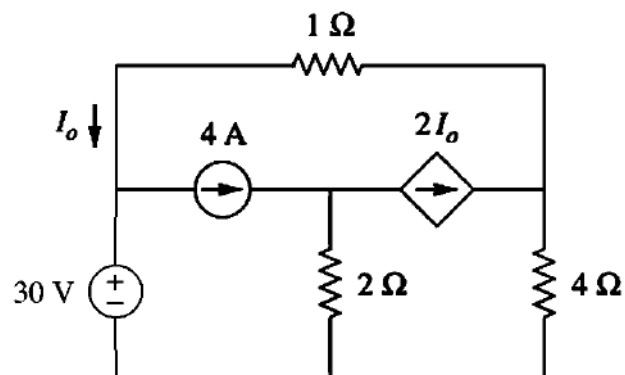
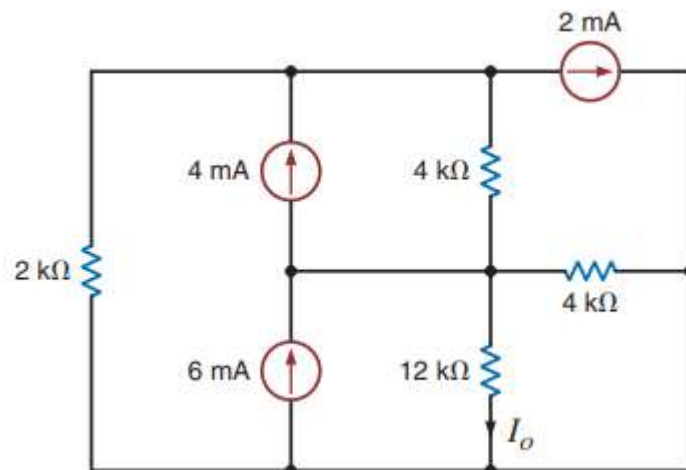


Figure 4b.

**Question 5:**

Answer the following questions for circuit of **Figure 5**.

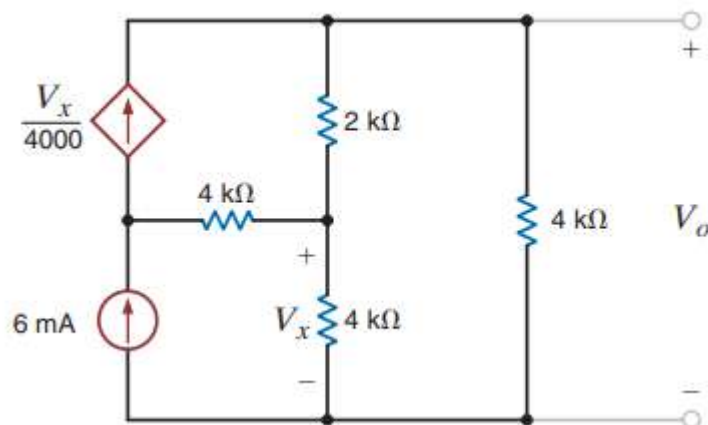
- Use node analysis to find the current  $I_o$
- Find the power absorbed or delivered by each source.



**Figure 5.**

**Question 6:**

For the circuit of **Figure 6**, find  $V_o$  using mesh analysis.



**Figure 6.**

**Question 7:**

Use mesh analysis to find the value of  $V_x$  for the circuit in **Figure 7**.

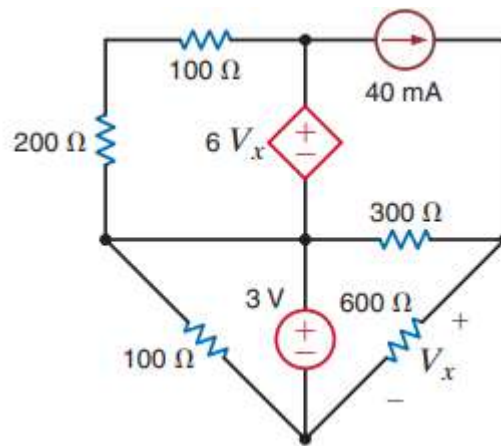


Figure 7.