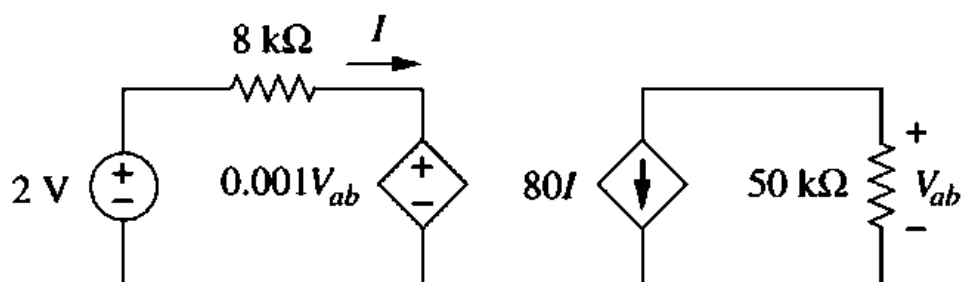


BRAC University
Department of Electrical & Electronic Engineering
Assignment 1a, Spring 2025
EEE/ECE101: Electrical Circuits I

Total Marks: 100

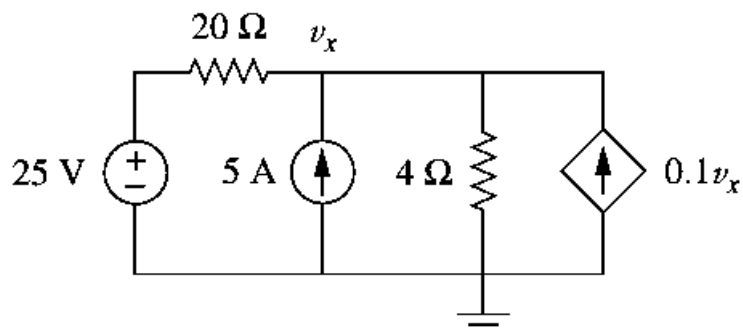
Q1. [10 marks]

Calculate the value of V_{ab} in the following circuit.



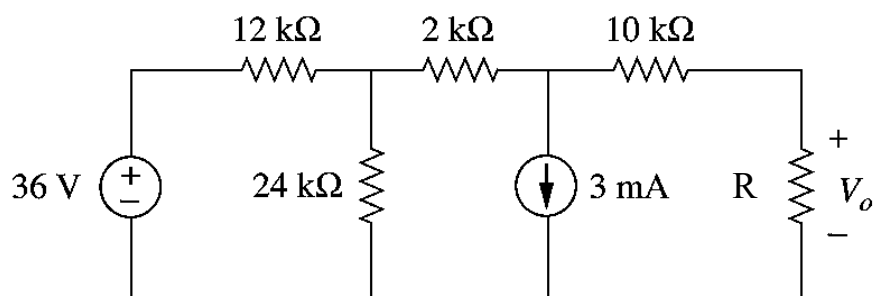
Q2. [10 marks]

Find the value of v_x in the following circuit.



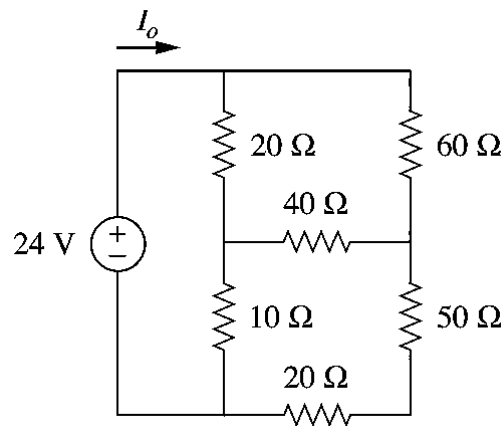
Q3. [10 marks]

Find the value of the resistance, R such that the voltage, $V_o = -1\text{ V}$, for the following circuit.



Q4. [10 marks]

Determine the current, I_0 for the following circuit.

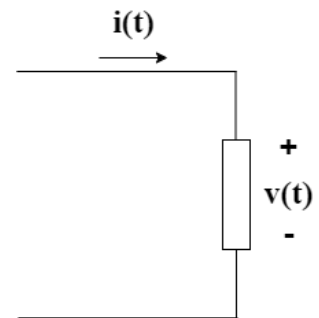


Q5. [10 marks]

The equations of the charge, $q(t)$ flowing through and the voltage, $v(t)$ across a device are as follows:

$$q(t) = 100 (1 + e^{-2.5t}) \text{ Coulombs}$$

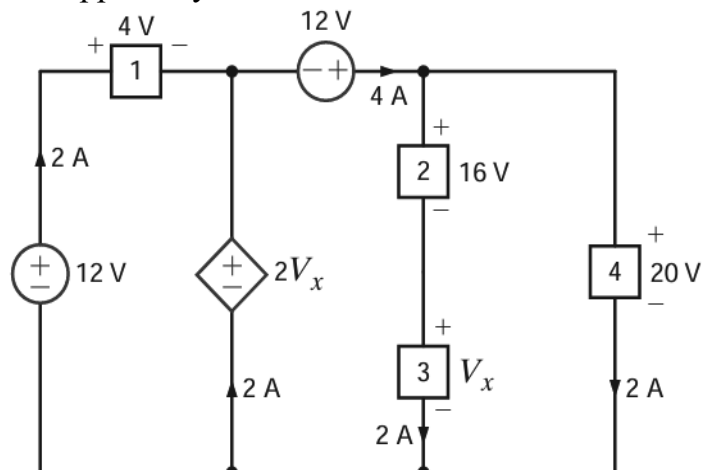
$$v(t) = 20 e^{1.2t} \text{ Volts}$$



- Determine the current, $i(t)$ flowing through the device.
- Calculate the voltage and the current at $t = 1 \text{ sec}$.
- Determine the power at $t = 1 \text{ sec}$ and explain whether the device is delivering or consuming power.

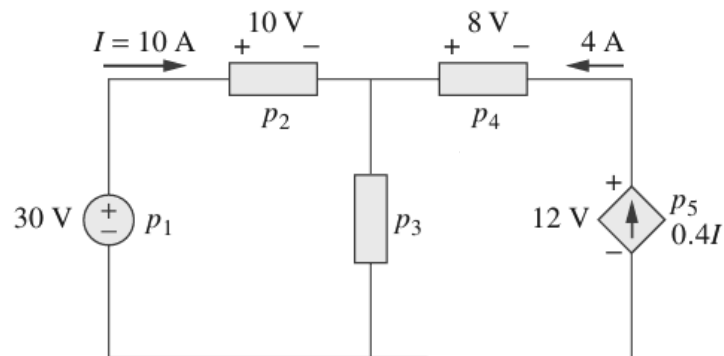
Q6. [10 marks]

Find the power absorbed or supplied by element 3.



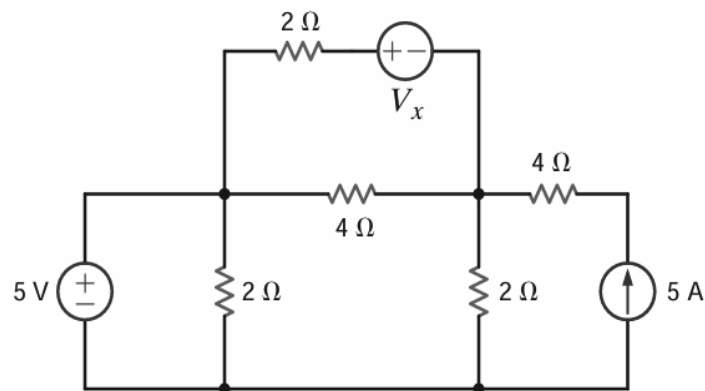
Q7. [10 marks]

Find the power absorbed or supplied by element 3.



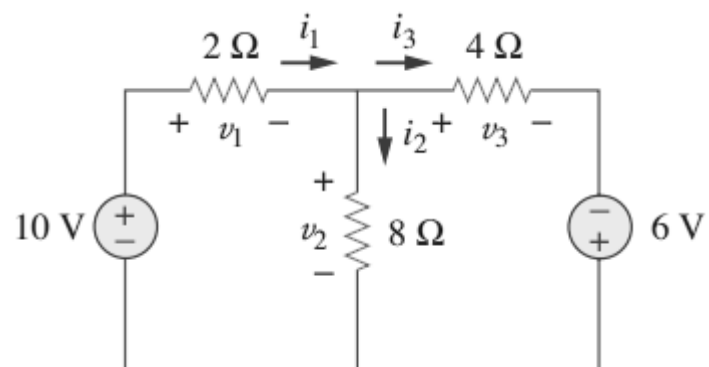
Q8. [10 marks]

Find the value of V_x , such that the 5-A current source supplies 50 W.



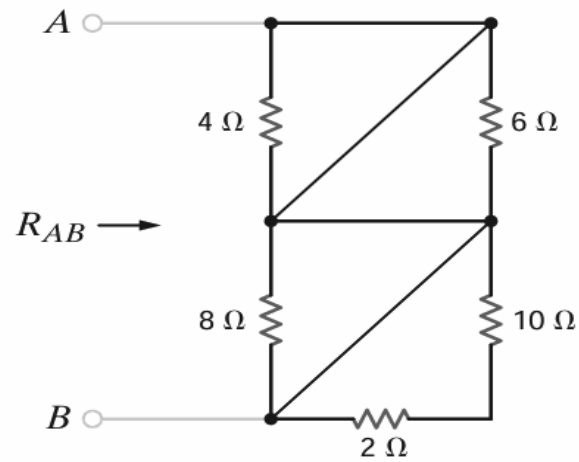
Q9. [10 marks]

Find the currents and voltages in the following circuit.



Q10. [10 marks]

(a) Calculate the equivalent resistance R_{AB} at terminals A-B.



(b) Calculate the equivalent resistance at terminals a-b.

