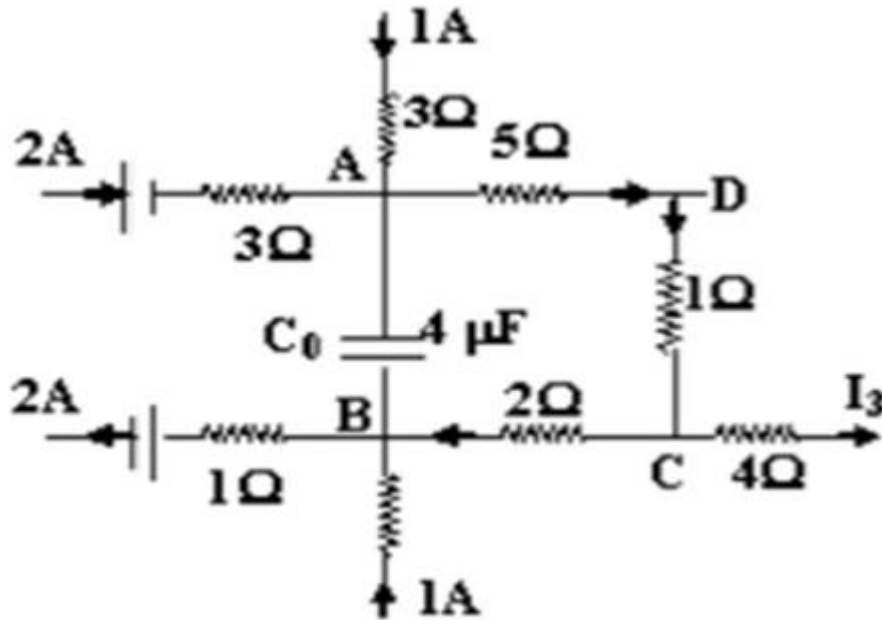


Answer to Question #74239, Physics / Electric Circuits

5. Calculate the energy stored in the capacitor C_0 below.



Solution.

$$W = \frac{C_0 U_{AB}^2}{2}$$

For contour $ADCB$:

$$U_{AB} = 5I_{AD} + I_{DC} + 2I_{CB}$$

For point A :

$$I_{AD} = 1 + 2 = 3 \text{ A}$$

For point D :

$$I_{DC} = I_{AD} = 3 \text{ A}$$

For point B :

$$I_{CB} = 2 - 1 = 1 \text{ A}$$

Then:

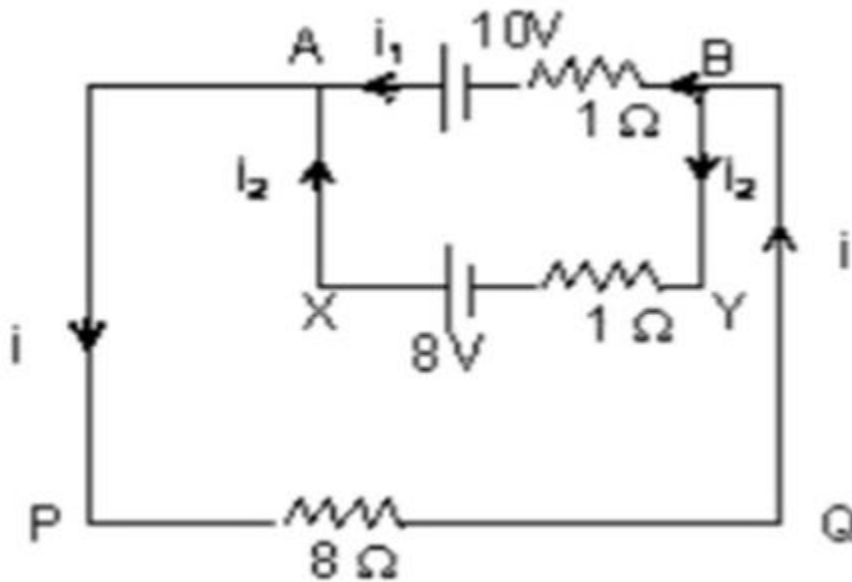
Answer to Question #74239, Physics / Electric Circuits

$$U_{AB} = 5 \cdot 3 + 3 + 2 = 20 \text{ V}$$

Answer:

$$W = \frac{4 \cdot 10^{-6} \cdot 20^2}{2} = 8 \cdot 10^{-4} \text{ J}$$

3. Find the current flowing through the circuit.



Solution.

For contour $ABYX$:

$$I_2 - I_1 = E_{XY} - E_{AB} = 8 - 10 = -2$$

For contour $ABQP$:

$$8I + I_1 = E_{AB} = 10$$

For point A :

Answer to Question #74239, Physics / Electric Circuits

$$I = I_1 + I_2$$

Then:

$$I_2 = I_1 - 2$$

$$\begin{cases} 8I + I_1 = 10 \\ I = 2I_1 - 2 \end{cases}$$

$$17I = 18$$

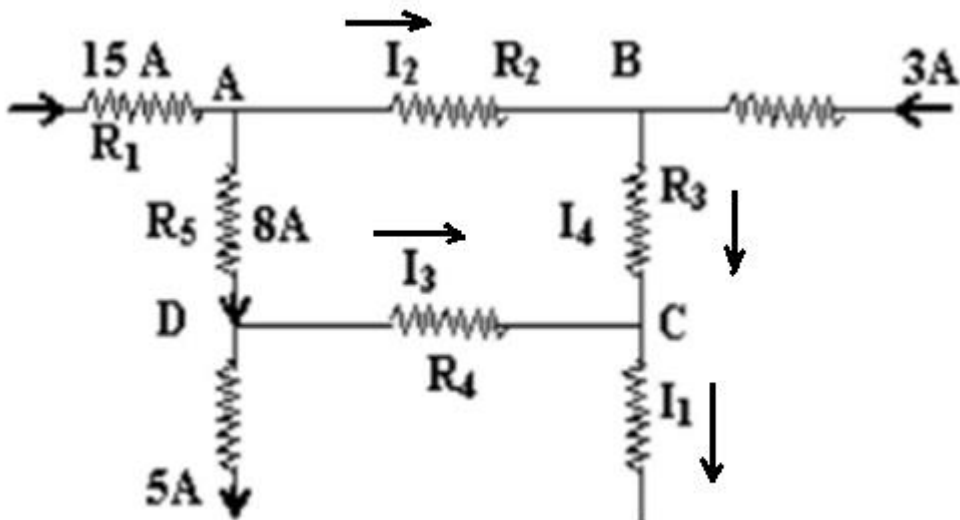
Answer:

$$I = \frac{18}{17} \text{ A}$$

$$I_1 = 10 - 8I = 10 - 8 \cdot \frac{18}{17} = \frac{26}{17} \text{ A}$$

$$I_2 = I - I_1 = \frac{18}{17} - \frac{26}{17} = -\frac{8}{17} \text{ A}$$

4. Calculate the value of current in the section of networks below.



Answer to Question #74239, Physics / Electric Circuits

Answer:

For point *D*:

$$I_3 = 8 - 5 = 3 \text{ A}$$

For point *A*:

$$I_2 = 15 - 8 = 7 \text{ A}$$

For point *B*:

$$I_4 = I_2 + 3 = 7 + 3 = 10 \text{ A}$$

For point *C*:

$$I_1 = I_4 + I_3 = 10 + 3 = 13 \text{ A}$$

Answer provided by <https://www.AssignmentExpert.com>