

Ministry of Higher Education and Scientific Research

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General Electricity

Problems & Exercises (of Chap 3, 4)

Electrokinetics, Magnetostatics

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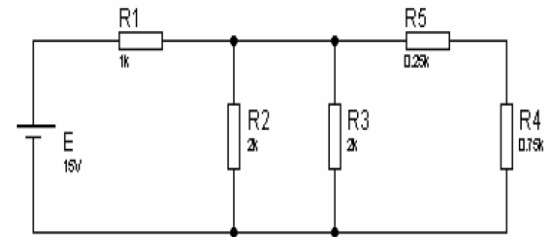
Exercise 1

Consider the following circuit:

Given:

$R_1 = 1 \text{ k}\Omega$, $R_2 = R_3 = 2 \text{ k}\Omega$, $R_4 = 0.75 \text{ k}\Omega$, $R_5 = 0.25 \text{ k}\Omega$, and a voltage source $E = 15 \text{ V}$.

1. Calculate the total resistance R_T seen by the source E .
2. Determine the current I supplied by the source E .
3. Calculate the voltage U_3 across resistor R_3 .
4. Calculate the voltage U_4 across resistor R_4 .
5. Calculate the voltage U_5 across resistor R_5 .
6. Determine the currents flowing in each branch.
7. Calculate the power dissipated by each resistor.
8. Compute the total power P_T dissipated by all the resistors, and the power P delivered by the source E .
Conclude.



Exercise 2

Consider the circuit shown in the figure below:

Given $E = 12 \text{ V}$, $R_1 = 2 \Omega$, $R_2 = 20 \Omega$, $R_3 = 16 \Omega$, $R_4 = 6 \Omega$, $R_5 = 12 \Omega$.

1. Calculate the current I delivered by the source by applying Kirchhoff's two laws.
2. Re-obtain the value of the current I by computing the equivalent resistance of the circuit.
3. Determine the potential difference (voltage) across R_2 and deduce the power dissipated by resistor R_2 .
4. Find the currents flowing through resistors R_4 and R_5 .

