

(18)

SITUATION INITIALE

$$R_1 = 10 \text{ m} \rightarrow V_1 = 400 \text{ V}$$

$$R_2 = 5 \text{ m} \rightarrow V_2 = 1000 \text{ V}$$

$$V_1 = k \frac{q_1}{R_1} \Rightarrow q_1 = \frac{V_1 \cdot R_1}{k} = \frac{400 \cdot 10 \cdot 10^{-2}}{9 \cdot 10^9} = 4,4 \cdot 10^{-9} \text{ C}$$

$$V_2 = k \frac{q_2}{R_2} \Rightarrow q_2 = \frac{V_2 \cdot R_2}{k} = \frac{1000 \cdot 5 \cdot 10^{-2}}{9 \cdot 10^9} = 5,5 \cdot 10^{-9} \text{ C}$$

$$q_T = q_1 + q_2 = 9,9 \cdot 10^{-9} \text{ C}$$

SITUATION FINALE

$$\begin{cases} V_1 = V_2 \\ q_1 + q_2 = q_T \Rightarrow q_2 = q_T - q_1 \end{cases}$$

$$\cancel{k} \frac{q_1}{R_1} = \cancel{k} \frac{q_2}{R_2}$$

$$\frac{q_1}{R_1} = \frac{q_T - q_1}{R_2}$$

$$R_2 \cdot q_1 = R_1 (q_T - q_1)$$

$$R_2 \cdot q_1 + R_1 \cdot q_1 = R_1 \cdot q_T$$

$$q_1 (R_1 + R_2) = R_1 \cdot q_T$$

$$q_1 = \frac{R_1 \cdot q_T}{R_1 + R_2} = \frac{10 \cdot 10^{-2} \cdot 9,9 \cdot 10^{-9}}{10 \cdot 10^{-2} + 5 \cdot 10^{-2}} = \boxed{6,6 \cdot 10^{-9}}$$

$$V_1 = V_2 = k \cdot \frac{q_1}{R_1} = 9 \cdot 10^9 \cdot \frac{6,6 \cdot 10^{-9}}{10 \cdot 10^{-2}} = \boxed{594 \text{ V}}$$