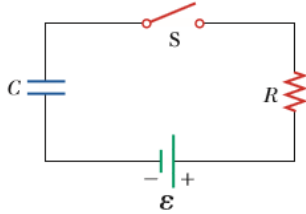
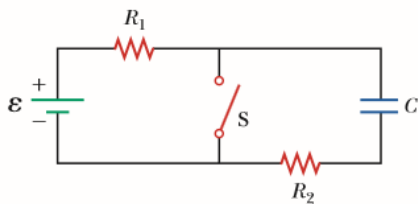


- 38.** Consider a series RC circuit as in Figure P28.38 for which $R = 1.00 \text{ M}\Omega$, $C = 5.00 \text{ }\mu\text{F}$, and $\mathcal{E} = 30.0 \text{ V}$. Find (a) the time constant of the circuit and (b) the maximum charge on the capacitor after the switch is thrown closed. (c) Find the current in the resistor 10.0 s after the switch is closed.



- 41.** In the circuit of Figure P28.41, the switch S has been open for a long time. It is then suddenly closed. Take $\mathcal{E} = 10.0 \text{ V}$, $R_1 = 50.0 \text{ k}\Omega$, $R_2 = 100 \text{ k}\Omega$, and $C = 10.0 \text{ }\mu\text{F}$. Determine the time constant (a) before the switch is closed and (b) after the switch is closed. (c) Let the switch be closed at $t = 0$. Determine the current in the switch as a function of time.



- 43.** The circuit in Figure P28.43 has been connected for a long time. (a) What is the potential difference across the capacitor? (b) If the battery is disconnected from the circuit, over what time interval does the capacitor discharge to one-tenth its initial voltage?

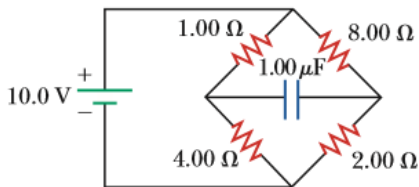
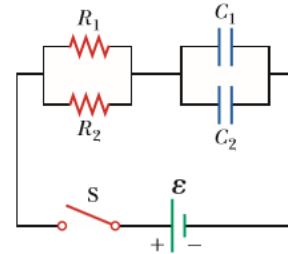


Figure P28.43

- 65.** The circuit in Figure P28.65 contains two resistors, $R_1 = 2.00 \text{ k}\Omega$ and $R_2 = 3.00 \text{ k}\Omega$, and two capacitors, $C_1 = 2.00 \text{ }\mu\text{F}$ and $C_2 = 3.00 \text{ }\mu\text{F}$, connected to a battery with emf $\mathcal{E} = 120 \text{ V}$. If there are no charges on the capacitors before switch S is closed, determine the charges on capacitors (a) C_1 and (b) C_2 as functions of time, after the switch is closed.



- 71.** Switch S shown in Figure P28.71 has been closed for a long time, and the electric circuit carries a constant current. Take $C_1 = 3.00 \text{ }\mu\text{F}$, $C_2 = 6.00 \text{ }\mu\text{F}$, $R_1 = 4.00 \text{ k}\Omega$, and $R_2 = 7.00 \text{ k}\Omega$. The power delivered to R_2 is 2.40 W . (a) Find the charge on C_1 . (b) Now the switch is opened. After many milliseconds, by how much has the charge on C_2 changed?

