16. (a) The potential difference across C_1 is $V_1 = 10\,\mathrm{V}$. Thus, $q_1 = C_1V_1 = (10\,\mu\mathrm{F})(10\,\mathrm{V}) = 1.0 \times 10^{-4}\,\mathrm{C}$.

(b) Let $C = 10\,\mu\mathrm{F}$. We first consider the three-capacitor combination consisting of C_2 and its two closest neighbors, each of capacitance C. The equivalent capacitance of this combination is

$$C_{\mathrm{eq}} = C + \frac{C_2C}{C + C_2} = 1.5C\ .$$

Also, the voltage drop across this combination is

$$V = \frac{CV_1}{C + C_{eq}} = \frac{CV_1}{C + 1.5C} = \frac{2}{5}V_1\ .$$

Since this voltage difference is divided equally between C_2 and the one connected in series with it, the voltage difference across C_2 satisfies $V_2 = V/2 = V_1/5$. Thus

$$q_2 = C_2V_2 = (10\,\mu\mathrm{F})\left(\frac{10\,\mathrm{V}}{5}\right) = 2.0 \times 10^{-5}\ \mathrm{V}\ .$$