66. (a) We denote the surface charge density of the disk as σ_1 for $0 < r < R/2$, and as σ_2 for $R/2 < r < R$. Thus the total charge on the disk is given by

$$\begin{aligned} q &= \int_{\text{disk}} dq = \int_0^{R/2} 2\pi\sigma_1 r\, dr + \int_{R/2}^{R} 2\pi\sigma_2 r\, dr = \frac{\pi}{4}R^2(\sigma_1 + 3\sigma_2) \\ &= \frac{\pi}{4}(2.20\times10^{-2}\,\text{m})^2[1.50\times10^{-6}\,\text{C/m}^2 + 3(8.00\times10^{-7}\,\text{C/m}^2)] \\ &= 1.48\times10^{-9}\,\text{C}\ . \end{aligned}$$

(b) We use Eq. 25-36:

$$\begin{aligned} V(z) &= \int_{\text{disk}} dV = k\left[\int_0^{R/2} \frac{\sigma_1(2\pi R')dR'}{\sqrt{z^2+R'^2}} + \int_{R/2}^{R} \frac{\sigma_2(2\pi R')dR'}{\sqrt{z^2+R'^2}}\right] \\ &= \frac{\sigma_1}{2\varepsilon_0}\left(\sqrt{z^2+\frac{R^2}{4}} - z\right) + \frac{\sigma_2}{2\varepsilon_0}\left(\sqrt{z^2+R^2} - \sqrt{z^2+\frac{R^2}{4}}\right)\ . \end{aligned}$$

Substituting the numerical values of σ_1, σ_2, R and z, we obtain $V(z) = 7.95\times10^2\,\text{V}$.