Problem 3.33)

a) Charge-density distribution: $\rho(\boldsymbol{r},t) = \sigma_{s0}\text{Circ}(r_{\parallel}/R)\delta(z)$, where $r_{\parallel} = \sqrt{x^2+y^2}$.

b) Polarization distribution: $\boldsymbol{P}(\boldsymbol{r},t) = P_0\hat{\boldsymbol{x}}\,\text{Rect}(x/L_x)\text{Rect}(y/L_y)\text{Rect}(z/L_z)$.

c) Magnetization distribution: $\boldsymbol{M}(\boldsymbol{r},t) = M_0\hat{\boldsymbol{z}}\,\text{Circ}(r_{\parallel}/R)\text{Rect}(z/h)\cos(\omega_0 t+\varphi_0)$.