2. A long coaxial cable (radius of the inner wire $R_0$, radius of the outside shell $R_2$) is filled with two different dielectrics ($\varepsilon_1$ for $R_0 < r < R_1$ and $\varepsilon_2$ for $R_1 < r < R_2$) and biased with the potential difference $V$ (+ on the wire, − on the shell). Find
a) the electric displacement $\mathbf{D}(\mathbf{r})$,
b) the electric field $\mathbf{E}(\mathbf{r})$,
c) the polarization $\mathbf{P}(\mathbf{r})$,
d) the location and amount of all bound charge.

[6 points]