66. We use Eqs. 24-15, 24-16 and the superposition principle.

(a) $E = 0$ in the region inside the shell.

(b) $E = (1/4\pi\varepsilon_0)(q_a/r^2)$.

(c) $E = (1/4\pi\varepsilon_0)(q_a + q_b)/r^2$.

(d) Since $E = 0$ for $r < a$ the charge on the inner surface of the inner shell is always zero. The charge on the outer surface of the inner shell is therefore $q_a$. Since $E = 0$ inside the metallic outer shell the net charge enclosed in a Gaussian surface that lies in between the inner and outer surfaces of the outer shell is zero. Thus the inner surface of the outer shell must carry a charge $-q_a$, leaving the charge on the outer surface of the outer shell to be $q_b + q_a$.