3. (a) The capacitance of a parallel-plate capacitor is given by \( C = \varepsilon_0 A/d \), where \( A \) is the area of each plate and \( d \) is the plate separation. Since the plates are circular, the plate area is \( A = \pi R^2 \), where \( R \) is the radius of a plate. Thus,

\[
C = \frac{\varepsilon_0 \pi R^2}{d} = \frac{\left(8.85 \times 10^{-12} \text{ F/m}\right) \pi \left(8.2 \times 10^{-2} \text{ m}\right)^2}{1.3 \times 10^{-3} \text{ m}} = 1.44 \times 10^{-10} \text{ F} = 144 \text{ pF}.
\]

(b) The charge on the positive plate is given by \( q = CV \), where \( V \) is the potential difference across the plates. Thus,

\[
q = (1.44 \times 10^{-10} \text{ F})(120 \text{ V}) = 1.73 \times 10^{-8} \text{ C} = 17.3 \text{ nC}.
\]