№1

First, we find charge of the drop. 12 electrons will create charge of

$$q = 12 \cdot (-1.6) \cdot 10^{-19} C \approx 1.92 \cdot 10^{-18} C$$

Next we find electrostatic force, acting on drop

$$F = qE = 1.92 \cdot 10^{-18} C \cdot 2.55 \cdot 10^{4} N/C \approx 4.896 \cdot 10^{-14} N$$

In Miliken experimen electrostatic force is equal to gravitational, so we can find size of drop

$$F = mg = \rho \frac{4}{3} \pi r^3, \qquad r = \sqrt[3]{\frac{F}{4/3 \cdot \pi \rho}}$$

$$r \approx \sqrt[3]{\frac{4.896}{4/3\pi 1260}} \approx 2.1 \cdot 10^{-6} m$$