

22. (a) Eq. 22-1 gives

$$F = \frac{\left(8.99 \times 10^9 \text{ N}\cdot\text{m}^2/\text{C}^2\right) \left(1.00 \times 10^{-16} \text{ C}\right)^2}{\left(1.00 \times 10^{-2} \text{ m}\right)^2} = 8.99 \times 10^{-19} \text{ N} .$$

(b) If  $n$  is the number of excess electrons (of charge  $-e$  each) on each drop then

$$n = -\frac{q}{e} = -\frac{-1.00 \times 10^{-16} \text{ C}}{1.60 \times 10^{-19} \text{ C}} = 625 .$$