

19. (a) The frequency of revolution is

$$f = \frac{Bq}{2\pi m_e} = \frac{(35.0 \times 10^{-6} \text{ T})(1.60 \times 10^{-19} \text{ C})}{2\pi(9.11 \times 10^{-31} \text{ kg})} = 9.78 \times 10^5 \text{ Hz} .$$

- (b) Using Eq. 29-16, we obtain

$$r = \frac{m_e v}{qB} = \frac{\sqrt{2m_e K}}{qB} = \frac{\sqrt{2(9.11 \times 10^{-31} \text{ kg})(100 \text{ eV})(1.60 \times 10^{-19} \text{ J/eV})}}{(1.60 \times 10^{-19} \text{ C})(35.0 \times 10^{-6} \text{ T})} = 0.964 \text{ m} .$$