

16. (a) The accelerating process may be seen as a conversion of potential energy eV into kinetic energy. Since it starts from rest, $\frac{1}{2}m_e v^2 = eV$ and

$$v = \sqrt{\frac{2eV}{m_e}} = \sqrt{\frac{2(1.60 \times 10^{-19} \text{ C})(350 \text{ V})}{9.11 \times 10^{-31} \text{ kg}}} = 1.11 \times 10^7 \text{ m/s} .$$

- (b) Eq. 29-16 gives

$$r = \frac{m_e v}{eB} = \frac{(9.11 \times 10^{-31} \text{ kg})(1.11 \times 10^7 \text{ m/s})}{(1.60 \times 10^{-19} \text{ C})(200 \times 10^{-3} \text{ T})} = 3.16 \times 10^{-4} \text{ m} .$$