(a). $E_k = 50\,\text{GeV} = 50 \times 10^9 \times 1.6 \times 10^{-19}\text{J} = 8 \times 10^{-9}\,\text{J}$.

(b). $v_f = \sqrt{\frac{2E_k}{m}} = \sqrt{\frac{2 \times 8 \times 10^{-9}\,\text{J}}{9.11 \times 10^{-31}\,\text{kg}}} = 1.325 \times 10^{11}\,\text{m\,s}^{-1}$.

(c). $v_f^2 = 2ad \Rightarrow a = \frac{(1.325 \times 10^{11}\,\text{m\,s}^{-1})^2}{2 \times 3.2 \times 10^3\,\text{m}} = 2.743 \times 10^{18}\,\text{m\,s}^{-2}$. Then $t = \frac{v_f}{a} = \frac{1.325 \times 10^{11}\,\text{m\,s}^{-1}}{2.743 \times 10^{18}\,\text{m\,s}^{-2}} = 4.83 \times 10^{-8}\,\text{s}$

(d).