

Name: \_\_\_\_\_

Do Not Use Pen

1. An electron ( $m = 9.11 \times 10^{-31}$  kg,  $q = -1.602 \times 10^{-19}$  C) is accelerated to a maximum speed of  $7 \times 10^6$  m/s by placing it into a field with a potential difference  $\Delta V$ . What is the required magnitude of the potential difference  $\Delta V$ ?

$\Delta V =$	V
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2. The same electron then enters a region of constant magnetic field  $B = 9.11 \times 10^{-4}$  T, causing it to move in a circle. Determine the radius  $r$  of this circle in cm.

$r =$	cm
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3. On page 69 of the lab manual, shortly after equation (7), you were asked to derive an equation for  $r^2$  that did not have a  $B$  in it anywhere. The equation you derived is started for you here, but **it is missing exponents** for several terms. **ADD ONLY EXPONENTS** to the symbols to make this equation correct. You may not otherwise add, change, or re-arrange anything.

$r^2 = \frac{5 R V}{2 \mu_0 N i} \left( \frac{q}{m} \right)$
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