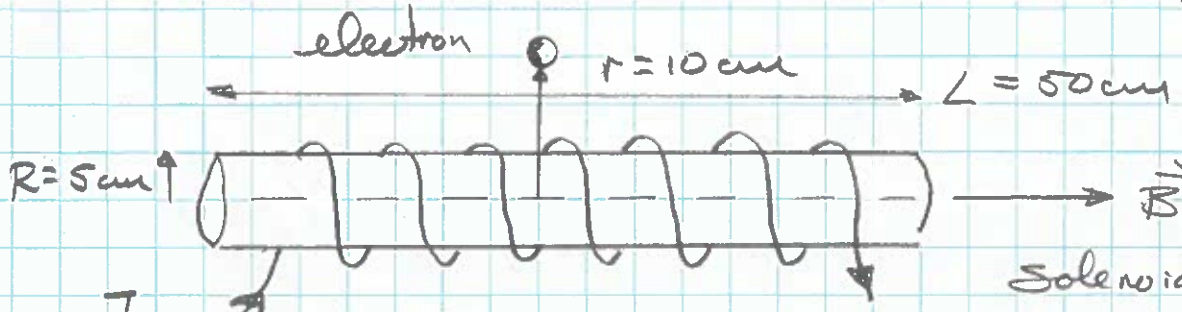


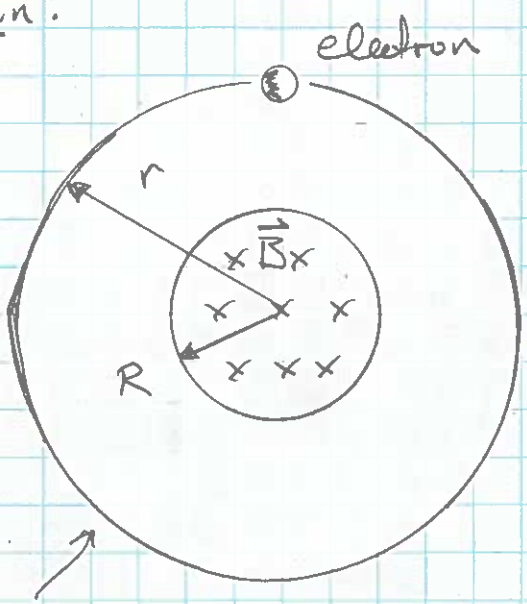

$\frac{dI}{dt} = 0.5\ A/s$

Solenoid field

$B = \mu_0 n I$

$= \mu_0 \frac{N}{L} I$

Cross Section:




Apply Faraday's Law in field form to the circle of radius r:

$$\oint \vec{E} \cdot d\vec{s} = -\frac{d}{dt} \int \vec{B} \cdot d\vec{A}$$

By symmetry:

$$E 2\pi r = -\frac{d}{dt}(\pi R^2 B) = -\pi R^2 \frac{dB}{dt}$$

for just magnitude:

$$E = \frac{R^2}{2r} \frac{dB}{dt} = \frac{R^2}{2r} \mu_0 \frac{N}{L} \frac{dI}{dt}$$

$$E = 6.283 \times 10^{-5}\ V/m$$

So: $a = \frac{F}{m} = \frac{eE}{m} = \underline{1.103 \times 10^{7}\ m/s^2}$