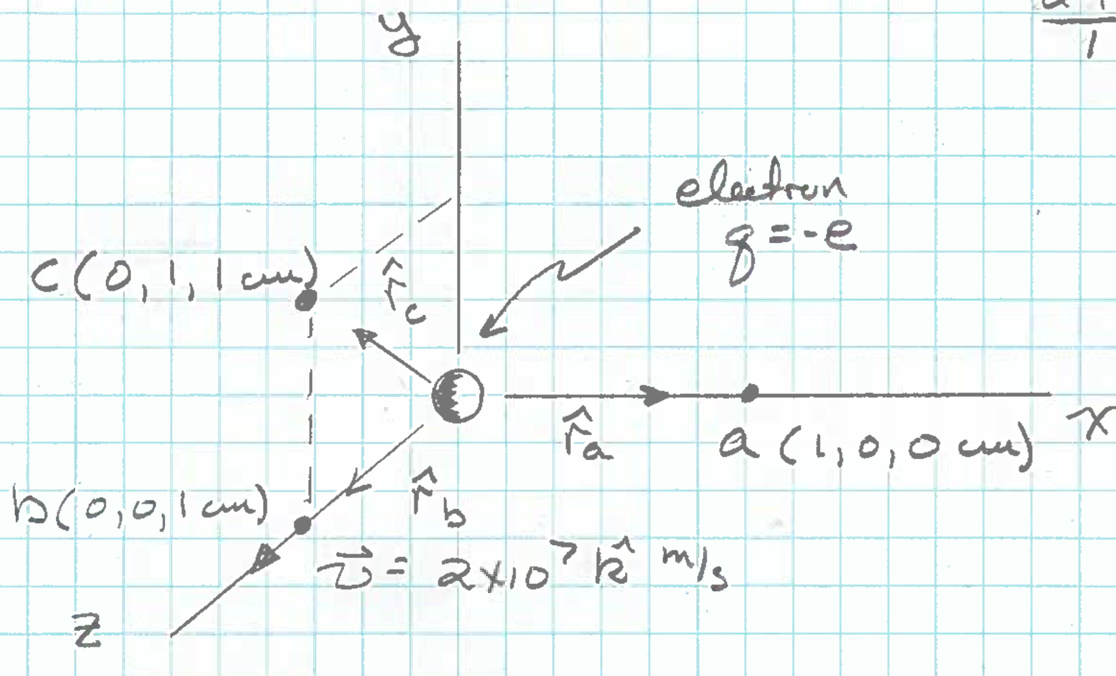

$$\vec{B} = \frac{\mu_0}{4\pi} \frac{q\vec{v} \times \hat{r}}{r^2} = -\frac{\mu_0}{4\pi} \frac{e\vec{v} \times \hat{r}}{r^2}$$

a.) $r = 1\,\text{cm}$, $\hat{r}_a$ as shown.

$$\vec{v} \times \vec{r}_a = |\hat{r}_a|\, v \sin 90^\circ = v$$

So

$$|\vec{B}| = \frac{\mu_0 e v}{4\pi r^2} = 3.2 \times 10^{-15}\ T$$

Direction by RHR

$\vec{v} \times \hat{r} \Rightarrow +y$ direction

but, $q\vec{v} \times \hat{r} = -e\vec{v} \times \hat{r}$

So: $\vec{B} = -3.2 \times 10^{-15} \hat{j}\ T$ i.e. $-y$ direction

b.) $\vec{v} \times \hat{r}_b = 0 \Rightarrow \vec{B} = 0$.

e.) $r = \sqrt{2}$ cm $= 1.414$ cm

from sketch:

$$\vec{v} \times \hat{r}_c = v|\hat{r}_c| \sin 45° = v \sin 45°$$

So: $|\vec{B}| = \dfrac{\mu_0 e v \sin 45}{4\pi r^2} = 1.132 \times 10^{-15}$ T

Direction by RHR:

$\vec{v} \times \hat{r} \Rightarrow -x$ direction

but, $q\vec{v} \times \hat{r} = -e\vec{v} \times \hat{r} \Rightarrow +x$ direction

$\therefore$ $\vec{B} = 1.132 \times 10^{-15}\, \hat{i}$ T