Name _____

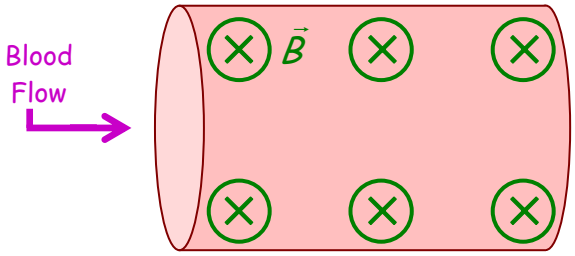
Quiz 4

1)[6] In the diagram below, ions in the blood in an artery of width w flow to the right with a magnetic field into the page.

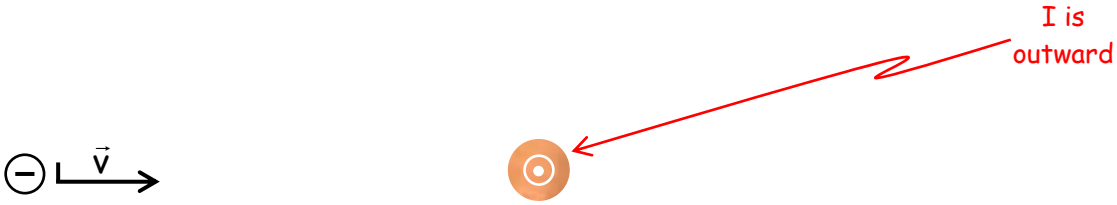
a)[2] Sketch the paths of positive and negative ions.
b)[1] Sketch the electric field that results from the charge separation.
c)[1] Sketch how you would attach a voltmeter to measure the electric field
d)[2] If V = 0.60 mV across a 0.50 cm artery in B = 0.35 T, what's v_{flow}?

$$\vec{F} = q\vec{E} + qv_{flow}\vec{B}$$

$$E = \frac{\Delta V}{d}$$



2)[4] For a long straight wire as shown below, with current flowing out of the page (coming at you),
a) sketch the magnetic field lines (don't forget arrows, think about spacing and mostly fill the space).
b) show the direction of the force on an electron zipping in from the left due to B.



"You say you spent five years at the North Pole?"