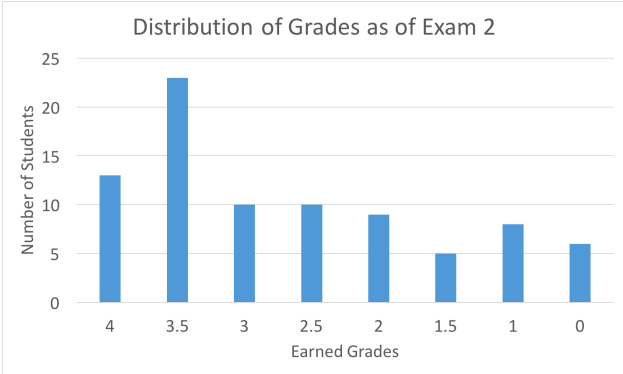
A negative charge ($-q$) is moving in the $+x$ direction when it encounters a region of constant magnetic field pointing in the $-y$ direction. Which is the direction of the initial net force on the charge?

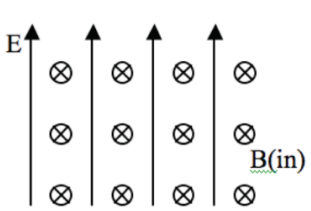
A. $+y$
B. $-y$
C. $+z$
D. $-z$
E. ???

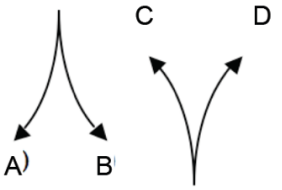
GRADE DISTRIBUTION



MAGNETOSTATICS

A proton ($q = +e$) is released from rest in a uniform $\mathbf{E}$ and uniform $\mathbf{B}$. $\mathbf{E}$ points up, $\mathbf{B}$ points into the page. Which of the paths will the proton initially follow?

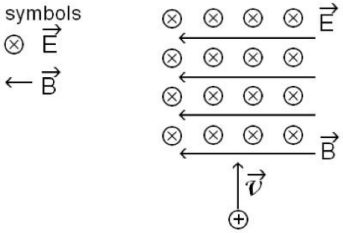




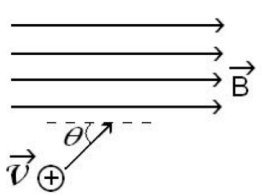
E. It will remain stationary

A + charged particle moving up (speed v) enters a region with uniform $\mathbf{B}$ (left) and uniform $\mathbf{E}$ (into page). What's the direction of $\mathbf{F}_{net}$ on the particle, at the instant it enters the region?

A. To the left
B. Into the page
C. Out of the page
D. No net force
E. Not enough information



A proton (speed v) enters a region of uniform $\mathbf{B}$. v makes an angle θ with $\mathbf{B}$. What is the subsequent path of the proton?



A. Helical
B. Straight line
C. Circular motion, ⊥ to page. (plane of circle is ⊥ to $\mathbf{B}$)
D. Circular motion, ⊥ to page. (plane of circle at angle θ w.r.t. $\mathbf{B}$)
E. Impossible. $\mathbf{v}$ should always be ⊥ to $\mathbf{B}$