

Magnetism #2

p654 MC

p656 P 7, 21

online ① mag field

② mag F vector draw

p654 - Multiple Choice

3) e^- moves $L \rightarrow R$ when enter B_{in}

e^- $\times \times \times B$
 $\rightarrow \times \times \times$

The accel is: down

left hand F is down so a is down

8) Double I in wire as detector of external B , what happens to F ?

$$F = BIl$$

doubles

- Concept

19) $\times \times \times B$
 $\ominus \rightarrow \times \times \times$

e^- enters B field

a) direction of F ? Left hand

down

b) effect on speed?

As the electrons path changes due to magnetic force, the direction of the force changes too, it is always perpendicular to the velocity of the electron thus it makes a circle in the vertical plane.

c) If the charged particle were a proton then the force exerted on proton would point upward initially. The proton also makes a circle moving in the opposite direction to electron

26) Two // wires, current same direction

A) Does moving q in one wire cause F_B on charge in other wire? yes

B) direction of F ? The forces are \perp to wires. If the currents in same direction the wires will attract. if the currents in opposite directions wires will repel each other

- Problems

7) $m = 15g$
 $l = 10cm$
 $I = .50A$
 $B = ?$

wire horizontal b/w poles
horseshoe magnet, wire jumps
when I on

to allow jump

$$F_B > F_g$$

minimum equal

$$BIl = mg$$

$$B = \frac{mg}{Il}$$

$$B = \frac{(15 \times 10^{-3} kg)(9.81 m/s^2)}{.5A(.1m)} = 2.9T$$

2a) Two wires, length = L , current = I placed // separated by d .

a) What can you determine?

• The magnetic F b/t wires

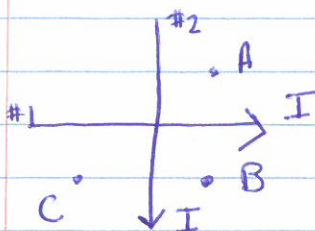
b) how change if one reverse direction?

• force will be repulsive

c) how change if one current doubles

• force will double

- Online • B due to Wire Concept



A) direction of B_{net} at A?

#1 out #2 out

out of page

B) B_{net} at B?

#1 in #2 out

$B_{net} = 0$ at B

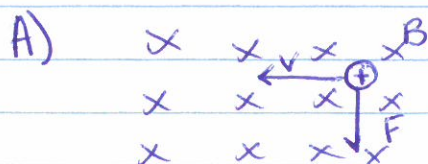
c) B_{net} at C?

#1 in #2 in

into page

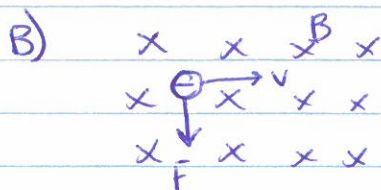
- Online Magnetic force vector Drawing

• charged particle enters B. Draw vector for F

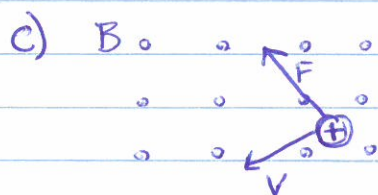


RHR
 fingers in
 thumb left
 palm down

(1)



LHR
 fingers in
 thumb right
 palm down



RHR
 fingers out
 thumb diagonal down
 palm diagonal up

F + v must be \perp !