**Chapter 29. Magnetic Fields**

St. ID: , Name:

1. Find the direction of the magnetic field acting on a positively charged particle moving in the various situations shown in Figure P28.3 if the direction of the magnetic force acting on it is as indicated.

Ans: (a) into the page (b) toward the right

 (c) toward the bottom of the page

 **Figure P28.3**

1. A proton travels with a speed of 5.02 × 106 m/s in a direction that makes an angle of 60.0° with the direction of a magnetic field of magnitude 0.180 T in the positive *x* direction. What are the magnitudes of (a) the magnetic force on the proton and (b) the proton’s acceleration?

Ans: (a) 1.25×10-13 N (b) 7.50×1013 m/s2

1. An electron moves in a circular path perpendicular to a constant magnetic field of magnitude 1.00 mT. The angular momentum of the electron about the center of the circle is 4.00 × 10-25 kg⸳m2/s. Determine (a) the radius of the circular path and (b) the speed of the electron

Ans: (a) R= 5.00 cm (b) v=8.78×106 m/s

1. A strong magnet is placed under a horizontal conducting ring of radius *r* that carries current *I* as shown in Figure P28.27. If the magnetic field $\rightharpoonaccent{B}$ makes an angle θ with the vertical at the ring’s location, what are (a) the magnitude and (b) the direction of the resultant magnetic force on the ring?

Ans: (a) 2πrlBsinθ (b) up, away from magnet

**Figure P28.27**