SP212 Quiz 7

Name:  Dr. Wilson

1) An electron undergoes uniform circular motion in the clockwise direction on this page. What is the direction of the uniform magnetic field responsible for this motion?
   a) ←
   b) →
   c) ↑
   d) ↓
   e) ○ (out of this page)
   f) ○ (into this page)

2) What uniform magnetic field, applied perpendicular to a beam of electrons moving at a speed $1.30 \times 10^6$ m/s, is required to make the electrons travel in a circular arc of radius 0.350 m?
   
   a) 10.5 $\mu$T
   b) 12.8 $\mu$T
   c) 16.0 $\mu$T
   d) 19.7 $\mu$T
   e) 21.1 $\mu$T

   $eB = \frac{mv}{c}$

   $B = \frac{mv}{ge} = 21.1 \times 10^{-6} \text{T}$

3) A wire of length $L = 1.8$ m carries a $i = 13.0$ A. current, and makes an angle of $\theta = 35^\circ$ with a uniform magnetic field of magnitude $B = 1.5$ T. What is the magnitude of the magnetic force acting on the wire?

   a) 10 N
   b) 12 N
   c) 15 N
   d) 18 N
   e) 20 N

   $|F_B| = iLB\sin\theta = 20 \text{ N}$