# Physics 112
# Quiz #19
# November 6, 2000

**Name: _____**

***IF YOU WANT A QUESTION GRADED OUT OF THREE POINTS (–1 [MINUS ONE] FOR WRONG ANSWER!!) WRITE "3" IN SPACE PROVIDED ON EACH QUESTION.***

***Note: Questions on both sides of page***

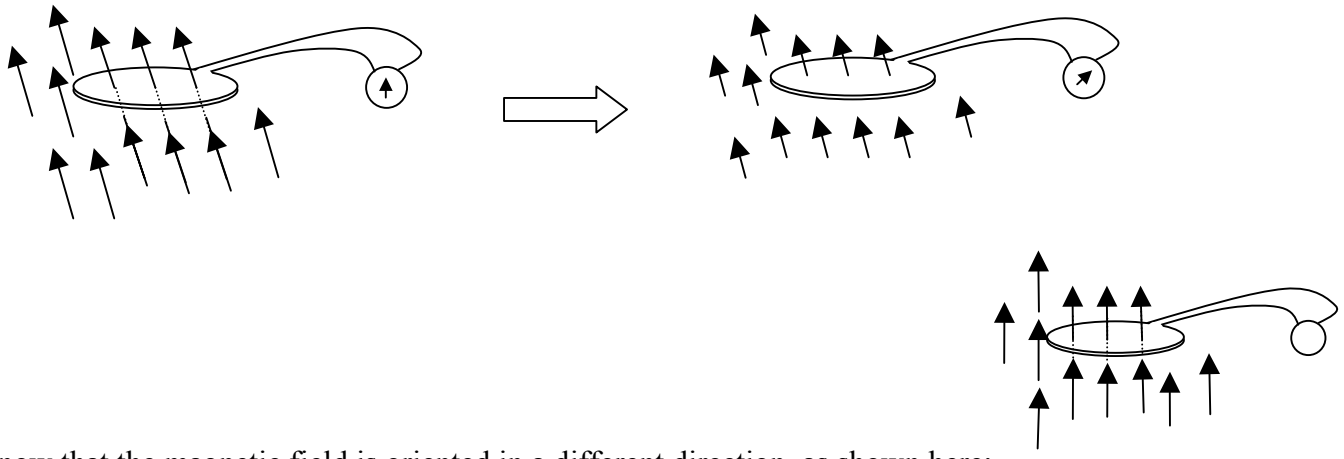
1. Two identical resistors are carrying an electric current; the electric potential at the left end of each resistor is $V_{left}$. The potential at the right end of resistor "A" is $2V_{left}$, and the potential at the right end of resistor "B" is $4V_{left}$. What is the ratio of $I_A$ to $I_B$? $I_A / I_B$ =

   A. 1
   B. 2
   C. 3
   D. 4
   E. ½
   F. 1/3
   G. ¼
   H. 2/3
   I. 3/2
   J. ¾

2. A proton is moving along the y axis toward positive y. A magnetic field pointing toward positive z is switched on. The proton then:
   A. experiences no force
   B. experiences a force pushing it toward positive x
   C. experiences a force pushing it toward negative x
   D. experiences a force pushing it toward positive y
   E. experiences a force pushing it toward negative y
   F. experiences a force pushing it toward positive z
   G. experiences a force pushing it toward negative z

   ***Grade out of 3? Write "3" here: _____***

3. This diagram shows a conducting loop connected to a galvanometer. The large arrows represent a uniform magnetic field, and show that the magnetic field magnitude is ***decreasing*** from, let's say, 10 T down to 5 T over a two-second period. As this happens, current flows and so the galvanometer needle deflects as shown.



Suppose now that the magnetic field is oriented in a different direction, as shown here:



While it is in this orientation, the magnetic field ***increases*** from 8 T to 13 T over a two-second period.
In that case, during the time the field is increasing,

A. no current flows
B. the same amount of current flows as in the first case, and it flows in the same direction
C. more current flows than in the first case, but it flows in the same direction
D. less current flows than in the first case, but it flows in the same direction
E. the same amount of current flows as in the first case, but it flows in the opposite direction
F. more current flows than in the first case, and it flows in the opposite direction
G. less current flows than in the first case, and it flows in the opposite direction

***Grade out of 3? Write "3" here: _____***

4. A loop of wire is held motionless in a uniform and unchanging magnetic field which is perpendicular to the plane of the loop. At a given moment, the loop is quickly flipped upside down and then held motionless again. Then:

A. No current flows in the loop at any time.
B. Current flows *before* and *after* the loop is flipped, but not during the flipping process.
C. Current flows during the flipping process, but not before or after the loop is flipped.
D. Current flows during the flipping process, but also before the loop is flipped.
E. Current flows during the flipping process, but also after the loop is flipped.
F. Current flows before, during, and after the flipping process.