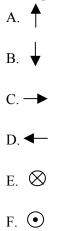
Physics 112 Quiz #19 November 5, 1999

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.

1. Suppose that a continuous wire runs around the four edges of this page, carrying a *clockwise* current. Circle <u>all</u> letters corresponding to the directions of an *external* magnetic field that would *not* cause a torque to be exerted on this loop.



- 2. Suppose you lower a large bar magnet on top of the loop described in #1, with the *south* pole of the magnet closer to the loop (i.e., long axis [N-S axis] of the magnet perpendicular to plane of loop). What should you expect to happen:
 - A. Loop will be attracted toward the magnet.
 - B. Loop will be repelled away from the magnet.
 - C. Loop will be neither attracted nor repelled, but will experience a torque.
 - D. Loop will experience no attraction, no repulsion, and no torque.

Grade out of 3? Write "3" here:

- 3. A wire loop is sitting in a magnetic field. The field is pointing perpendicular to the plane of the loop. Which of these fields will cause the *largest* magnitude of current to flow in the loop?
 - A. Initial value 10 T, constant
 - B. Initial value 10 T, increasing at 2 T/s
 - C. Initial value 5 T, decreasing at 3 T/s
 - D. Initial value 20 T, constant
 - E. Initial value 40 T, increasing at 1 T/s

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

- 4. A uniform magnetic field points in the positive z direction; a straight wire carrying a current is sitting in this field. Rank in order the *magnitude of the force* exerted on this wire for the following five orientations of this wire:
 - A. along the x axis
 - B. along the y axis
 - C. along the z axis
 - D. in the xy plane, but not parallel to either the x or y axes
 - E. in the yz plane, but not parallel to either the y or z axes

Answer: (largest)_____