UNIVERSITY OF ALABAMA
Department of Physics and Astronomy

PH 126 / LeClair   Fall 2009

Quiz: induction . . .

1. A magnetic field of 0.3 T is directed perpendicular to the plane of a circular loop of wire of radius 25 cm. Find the magnetic flux through the area enclosed by this loop.

   □ 2.3×10^{-2} T
   □ 7.1×10^{-3} T·m^2
   □ 4.8×10^{-1} T·m^2
   □ 5.9×10^{-2} T·m^2

2. A magnet and a non-magnet of the same mass are dropped into copper tubes of equal length. Which takes longer to come out?

   □ The magnet.
   □ The non-magnet.
   □ It takes the same amount of time.
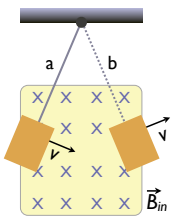
3. A flat metal plate swings at the end of a bar as a pendulum, as shown. When the pendulum is at position **a**, what are the directions of the induced currents and (magnetic) force on the bar, respectively?

   □ Counterclockwise; to the left
   □ Clockwise; to the left
   □ Counterclockwise; to the right
   □ Clockwise; to the right

(a)   (b)   (c)
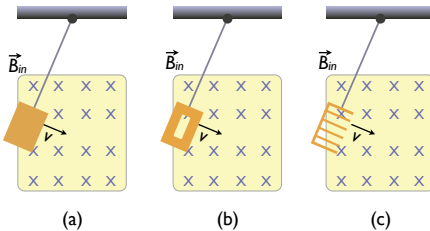
4. Which pendulum experiences the largest (magnetic) force?

   □ a
   □ b
   □ c
   □ they all experience the same force
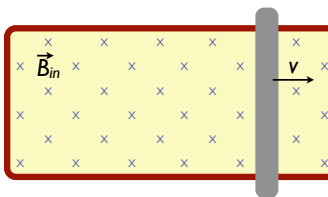
5. A conducting bar slides on two fixed conducting rails with, a constant magnetic field pointing into the page. What are the directions of the induced current and the force on the bar, respectively?

   □ Counterclockwise; to the left
   □ Clockwise; to the left
   □ Counterclockwise; to the right
   □ Clockwise; to the right