Quiz 3 Solution

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.
   - $2.3 \times 10^{-2}$ T
   - $7.1 \times 10^{-3}$ T·m²
   - $4.8 \times 10^{-1}$ T·m²
   - $5.9 \times 10^{-2}$ T·m²

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

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