

PH 102 Quiz 6: Magnets & Induction

1. An electron passes through a magnetic field without being deflected. What can you say about the angle between the magnetic field vector and the electron's velocity, if no other forces are present?

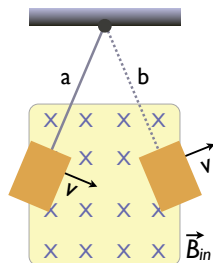
- They could be in the same direction
- They could be perpendicular
- They could be in opposite directions
- Both the first and third are possible

2. What should happen to the length of a spring if a large current passes through it? (*Hint: Think about the current in neighboring spring coils.*)

- It shortens
- It lengthens
- Nothing

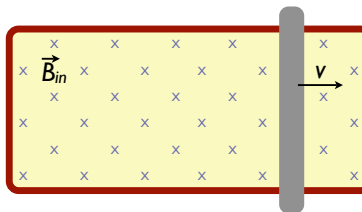
3. The magnetic flux through a loop can change due to a change in:

- The area of the coil
- The strength of the magnetic field
- The orientation of the loop
- All of the above



4. 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



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