Phys 212 Module 09 Baseline Quiz

Read sections 13.1 - 13.7

1. Magnetic flux through a surface is proportional to:
   a) The number of magnetic field lines passing through the surface

   b) The number of electric field lines passing through the surface

   c) The strength of the electric field parallel to the surface

   d) The strength of the magnetic field parallel to the surface

   e) None of the above.

2. What does Faraday's Law tell us?
   a) If the magnetic flux through a coil of wire changes, a voltage is created in the coil

   b) The magnetic field due to an induced current opposes the change in magnetic flux

   c) If the electric flux through a coil of wire changes, an emf is generated in the coil

   d) The electric field due to an induced current opposes the change in electric flux

   e) None of the above.

3. What does Lenz's Law tell us?
   a) If the magnetic flux through a coil of wire changes, a voltage is created in the coil.

   b) If the electric flux through a coil of wire changes, an emf is generated in the coil.

   c) The magnetic field due to an induced current opposes the change in magnetic flux.

   d) The electric field due to an induced current opposes the change in electric flux.

   e) None of the above.

4. Consider a circular loop sits in the
   a) Counter-clockwise.

   b) Clockwise.

   c) There will not be an induced current.

   d) More information is needed.

   e) None of the above.

5. Which of the following are examples given by the OpenStax book of the application of magnetic damping?

a) Separating metal from trash.

b) Damping oscillations in a very sensitive mass balance.

c) Magnetic braking on roller coasters.

d) Dynamic suspension in automobiles.

e) None of the above.

6. What is a "back emf"?
   a) The emf induced in an electric generator as it turns.

   b) The emf induced in an electric motor as it turns.

   c) The emf applied to an electric generator to keep it turning.

   d) The emf applied to an electric motor to keep it turning.

   e) None of the above.

7. According to the OpenStax book, the magnetic strip on the back of credit card is an example application of:
   a) Magnetic induction

   b) Eddy currents

   c) Magnetic damping

   d) Magnetic flux

   e) None of the above.

8. If a bar magnet is brought near a coil of wire connected to a voltmeter, the voltmeter will measure a voltage when:
   a) the bar magnet is stationary.

   b) the bar magnet is in motion.

   c) No voltage will be measured.

   d) None of the above.

9. How is magnetic flux calculated?
   a) By integrating the perpendicular component of the magnetic field over a surface.

   b) By integrating the parallel component of the magnetic field over a surface.

   c) By integrating the perpendicular component of the magnetic field along a line.

   d) By integrating the tangent component of the magnetic field along a line.

   e) None of the above.

10. Lenz's Law can be used to determine:

a) The direction that an induced current will flow through a loop or coil of wire.

b) The magnitude of the current induced in a loop or coil of wire.

c) The magnitude of the emf induced in a loop or coil of wire.

d) The direction of a magnetic field produced by a current through a long straight wire.

e) None of the above.