

**PH 1120 - Electromagnetic Induction - Lab Report**

**Your Name & Section: ?**

**Partner’s Name: ? Date: ?**

1. State the value of the Earth’s magnetic field magnitude that you measured, and comment on the field orientation that you observed at your station.

2. Consider the magnetic induction situation when the magnet is rapidly inserted into a coil, held motionless, and then rapidly removed from the coil. Explain briefly the circumstances in this 3-step process that produce an induced EMF, and why their polarities are different.

3. Now compare the situation in Prob. 2 above with the identical situation with the magnet turned end-for-end. Compare the polarities of the induced EMFs in these two situations, and explain briefly the reasons behind the polarities observed (between the situations referred to in Problems 2 and 3).

4. Consider the situation where you moved the magnet back and forth in the coil in periodic fashion, thus inducing a periodic EMF in the coil. Specify the kind of periodic motion that led to the induced EMF of largest amplitude (rapid back-and-forth, or less rapid back-and-forth motion). Explain the physical reason for this observed behavior.

5. For the magnet withdrawal portion of this experiment, calculate the average of the three areas measured, and then calculate the maximum deviation of the area measurements from this average, expressing the deviation as a percentage of the average. Repeat these calculations for the three area measurements of the associated insertions of the magnet into the coil.