Physics 2126 Experiment 7 Pre-Laboratory Assignment

Name_____ Instructor name _____

You must show and explain all work neat and organized to receive credit. Please show each step for calculations. YOU MUST TURN IN THIS SHEET to have your assignment graded.

1. (a) State Faraday's law and Lenz's law. (b) Using $Equation\ (2)$ from the lab manual as a guide, state three ways to change the magnetic flux. (5 pts)

2. Suppose a student recorded the following data during $Step\ 10$ of this experiment:

A	6.80 deg	4.65 deg	3.05 deg	2.38 deg	1.48 deg
Time	2.00 s	4.00 s	6.00 s	8.00 s	10.0 s

The student was careful to start taking data when the pendulum's angular position was zero. Unfortunately, she does not have a computer available to fit the data as you will in $Step\ 12$, but she knows that the amplitude of oscillations decays exponentially according to

$$A = A_0 e^{-(Bt)} + C, \text{ where } C = 0.$$

Use the data obtained by the student to plot a straight-line graph of the appropriate variables on the **graph paper provided**, and use it to find values for the parameters A_0 and B. Please show a detailed graph and calculations, and include appropriate units. (10 pts)

3. A ball and a magnet are released simultaneously from the same altitude. They both fall vertically, but the magnet passes through a coil on its way down. Which one reaches the ground first? Please make a couple of statements to support your answer. (5 pts)