**SPH 3U1 Lab # 1: The Period of a Recording Timer**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Problem:** What are the period and frequency of a recording timer?

**Materials:** recording timer, 1 m of ticker tape, carbon paper disc, stopwatch

**Procedure:**

1. Connect the timer to a power supply.
2. Attach the carbon paper disc, carbon side down, to the timer.
3. Thread one end of the paper tape into the timer, under the carbon disc and under the hammer.
4. Collect the results as follows: One person starts pulling the tape through the timer at a steady rate. Another person then switches on the power supply and starts a stopwatch at the same instant. Turn off the stopwatch when the paper just leaves the timer.

**Observations:**

In a data table, record the number of dots and the time for the run, in seconds. Calculate and record the frequency and the period of the timer.

**Questions:**

1. Why is it important in this investigation not to pull the tape too quickly?
2. Why is it equally important not to pull the tape too slowly?
3. Does it matter whether the dots are unevenly spaced along the tape? What would uneven spacing represent?
4. The period of many recording timers is 1/60 s or 0.017 s. Calculate the percentage error in your measurements of the period.
5. What are the major sources of error that could affect your measurements and your calculation of the period? How could you minimize each of these sources of error, so as to obtain a more accurate value for the period?

