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**Laboratory 1- Physiological Instrumentation**

**Purpose:** To properly use and become familiar with using “tools of the trade”. Physiological measurements involve measurement if chemical and physical parameters. To observe the “black box” instrumentation to experiments and measurements of human physiological events.

**Procedures:** Learning the basic unit of measurement.

*Recording Linear Measurements of my textbook:*

Step 1.

Length of lecture text:\_\_\_\_\_\_\_\_mm \_\_\_\_\_\_\_\_cm

Width of lecture text:\_\_\_\_\_\_\_\_\_mm \_\_\_\_\_\_\_\_cm

Depth of lecture text:\_\_\_\_\_\_\_\_\_\_mm. \_\_\_\_\_\_\_\_cm

*Volume Measurements:*

Step 2.

* Pouring some water in the beaker and recording the volume.

\_\_\_\_\_\_\_mL \_\_\_\_\_\_\_liters (l)

* Then pouring some water from the beaker into a graduated cylinder and recording the volume.

\_\_\_\_\_\_\_mL \_\_\_\_\_\_\_liters (l)

*Mass Measurements*

Step 3.

* Record the mass of the weight:\_\_\_\_\_\_\_mg \_\_\_\_\_\_\_\_g
* Pouring some water into the beaker and recording the mass of the liquid in the beaker:

\_\_\_\_\_\_\_mg \_\_\_\_\_\_\_g

Step 4.

*pH measurement:*

* Record the pH of the liquid in container “A”:\_\_\_\_\_\_\_
* Record the pH of the liquid in container “B”:\_\_\_\_\_\_\_
* Record the pH of the liquid in container “C”:\_\_\_\_\_\_\_

Step 5.

*Time measurements:*

* To determine my pulse rate after 15 seconds:\_\_\_\_\_\_\_beats/second

\_\_\_\_\_\_\_beats/minute

* To determine my pulse rate after 60 seconds:\_\_\_\_\_\_\_beats/minute

\_\_\_\_\_\_\_beats/second

\_\_\_\_\_\_\_beats/millisecond

**Results:**

*Recording Linear Measurements of my textbook:*

Step 1.

Length of lecture text:\_\_\_\_293\_\_\_\_mm \_\_29.3\_\_\_cm

Width of lecture text:\_\_\_\_\_266\_\_\_\_mm \_\_\_26.6\_\_\_cm

Depth of lecture text:\_\_\_\_40\_\_\_\_\_\_mm. \_\_\_4\_\_\_\_cm

*Volume Measurements:*

Step 2.

* Pouring some water in the beaker and recording the volume.

\_\_\_75\_\_\_\_mL \_\_\_0.075\_\_\_\_liters (l)

* Then pouring some water from the beaker into a graduated cylinder and recording the volume.

\_\_\_69\_\_\_\_mL \_\_0.069\_\_\_\_\_liters (l)

*Mass Measurements*

Step 3.

* Record the mass of the weight:\_\_\_13230\_\_\_\_mg \_\_\_13.23\_\_\_\_\_g
* Pouring some water into the beaker and recording the mass of the liquid in the beaker:

\_70,000\_\_\_mg \_\_\_70\_\_\_\_g

Step 4.

*pH measurement:*

* Record the pH of the liquid in container “A”:\_\_\_2\_\_\_\_
* Record the pH of the liquid in container “B”:\_\_5\_\_\_\_\_
* Record the pH of the liquid in container “C”:\_\_\_8\_\_\_\_

Step 5.

*Time measurements:*

* To determine my pulse rate after 15 seconds:\_\_1.3\_\_\_\_\_beats/second

\_\_\_\_78\_\_\_beats/minute

* To determine my pulse rate after 60 seconds:\_\_71\_\_\_\_\_beats/minute

\_\_\_1.18\_\_\_\_beats/second

\_\_\_0.071\_\_\_\_beats/millisecond

**Discussion:** Some of my classmates did not have the same textbook, so we might have a slightly different measurement in comparison to others. In determining the measurement of the volume in the beaker, the instructions did not indicate how much water to start off with, so we randomly poured an amount as our initial measurement. In determining the measurement of the pH for each liquid labeled, I presume that I was close within parameters of what my other classmates got as well. The results recorded for the pulse rate were recorded from my classmate at a calm, resting rate during class.

**Conclusions:** In conclusion, being able to understand the fundamental units of the metric system can be at first scary and confusing, but with practice can be fun and easy. To visualize and convert units can be at first tricky when trying to figure out if moving the decimal to the right or left. In determining the pH of a liquid knowing that 7 is Neutral and from 8-14 is considered most basic, while 6-1 is most acidic, it is important to understand. Upon observing the “black box” I learned that the electrode receives and relays electrical impulses to an amplifier. The input transducer converts different types of energy into electrical impulses for relay to an amplifier. The amplifier than receives and magnifies incoming signals sufficiently to drive a display on the computer screen. The output transducer receives the amplified signal and presents it on display of the computer screen to be charted and recording many events.