

Name: _____ Partner: _____ PH2223 - ____

Experiment Sheet for **Electronic Measurements**Tips:

- To get 1000 Hz out of your signal generator you'll need to set the multiplier to a factor of 10 and turn frequency knob to 100.
- On the O-scope at first you'll need to set all of the Trigger switches all the way up and all of the Vertical switches all the way up.
- Notice that a sweep rate of 200 $\mu\text{s}/\text{cm}$ will correspond to a 0.2 ms setting on TIME/DIV.
- Turn the amplitude knob on the signal generator at least one-fourth up ($1/4$ -turn).

DUAL TRACE OSCILLOSCOPE:

1. When looking at the sine wave output (y_1) what happened to your signal when you changed the sweep rate?
2. When looking at the sine wave output (y_1) what happened to your signal when you changed the sensitivity (volts/cm)?
3. When you went back to looking at y_1 you were supposed to measure the period of your signal by looking closely at your screen.
 - a. What did you get for your period? _____
 - b. What frequency would this correspond to? _____
 - c. What did you get for the peak to peak voltage? _____
 - d. What amplitude did this give you? _____
4. When you wired the diode and resistor what was the maximum current ($I = V/R$, use the amplitude of the voltage for V)?

5. Roughly sketch what your voltage looked like with the diode and without the diode in the space below.

6. Based on your observations from number 5 what do you think a diode does?

DIGITAL MULTIMETER:

1. Were your Ohmmeter readings close to the numbers printed on the rheostat? _____
2. What resistance did you measure for y_1 ? _____ y_2 ? _____
3. What was the resistance from y_1 to y_2 ? _____
4. What was your body's average resistance with dry hands (not squeezing too tightly and not when you hit a vein/artery)? _____
What about with wet hands? _____
5. Had you been holding a 120 V line what current would have gone through you with wet hands?

6. When you were measuring AC-voltage what did your voltmeter measure? _____
7. What did your O-scope show the voltage amplitude to be for the same voltage? _____
8. When testing the frequency response of your voltmeter what should the V_{rms} have been (that is what was 0.707 of the voltage amplitude that you kept constant)? _____
9. In the table below record the actual values that your voltmeter reported as this rms voltage for these different frequencies. Note that for each frequency you will have to adjust the amplitude setting on the signal generator to maintain a constant amplitude on your O-scope.

f (Hz)	50	200	400	800	1,600	3,200	6,400	12,500	40,000
V_{rms} (V)									

10. Around what frequency did your voltmeter become unreliable (when did the voltage that it was reporting become noticeably different from the actual voltage)? _____