

Experiment #3 Report

Name : _____

Name : _____

TA : _____

Section : _____

This write-up follows along with the Hands On section of the lab. You should complete this report as you do the lab exercises.

A. Determining the RC Circuit Configuration

1) Are you able to measure the value of the resistor? If not, explain the reason why you cannot make the measurement. **[10pts]**

2) Explain how you got your ohmmeter reading for the circuit in Figure 4. Why does it take some time before the ohmmeter's reading stabilizes? **[10pts]**

3) Can you determine the RC circuit configuration (series or parallel) using an ohmmeter? If so, how? **[10pts]**

B. Identifying Physical Values in a Series RC Circuit Black Box and a Parallel RC Circuit Black Box

4) Which box contains a series RC circuit? Which box contains a parallel RC circuit? (Identify the color of the binding posts.) **[10pts]**

Series RC Circuit Black Box

5) What is the time constant τ_1 ? **[10pts]**

6) What is the resistance of the series combination, $R_{\text{pot}} + R_{1k}$? **[15pts]**

7) Can you find the resistance and capacitance R_{box} and C_{box} ? Draw a possible RC circuit for the black box. Ask your TA for the resistance and capacitance of the resistor and the capacitor inside the black box. Are they in good agreement with the values you have obtained experimentally? Explain if there is(are) any significant difference(s). **[15pts]**

Parallel RC Circuit Black Box

8) What is the value of the resistor inside the black box? **[5pts]**

9) What is the time constant of the circuit with R_{ext} ? What is the value of the capacitor inside the black box? Ask your TA for the values of the resistor and the capacitor inside the black box. Are they in good agreement with the values you have obtained experimentally? Explain if there is(are) any significant difference(s). **[15pts]**