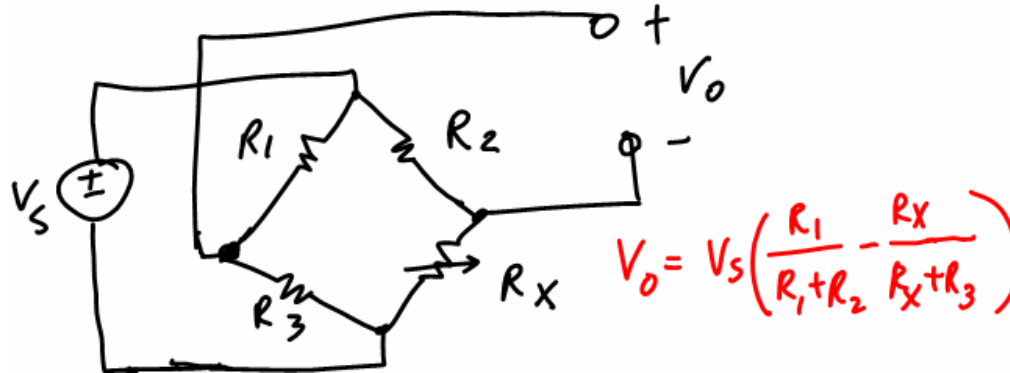


**Mobile Studio (MS) 02 - Basic Bridge Circuit Application using CdS Cell**

**1. Basic Bridge Circuit**

A basic bridge circuit relates the output voltage  $V_o$  in terms of the four resistors connected in diamond shape and the supply voltage  $V_s$ . If one of the four resistors is a variable resistor, the value of the variable resistor will determine the voltage  $V_o$ .

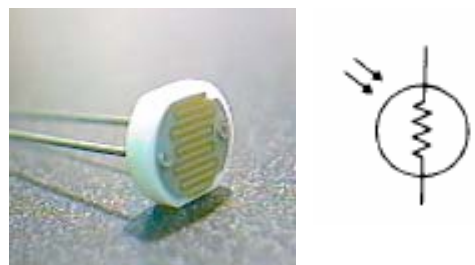


**2. Bridge Circuit in Load Cell**



A load cell is typically an electronic device that is used to convert a force, sensed the deformation resulted from the exerted force in a strain gauge, into an electrical signal. A load cell consists of four strain gauges in a bridge configuration, but is also available with one or two strain gauges.

**3. Bridge Circuit with CdS (Cadmium Sulfide) Cell**



A CdS cell is an interesting compound. Its resistance changes readily when exposed to light energy: the more light, the lower the resistance. In other words, CdS cells are photo-resistive light sensors. This is useful for measuring the intensity of light. These cells have a slower reaction time in response to changes in light as they have a large memory effect.

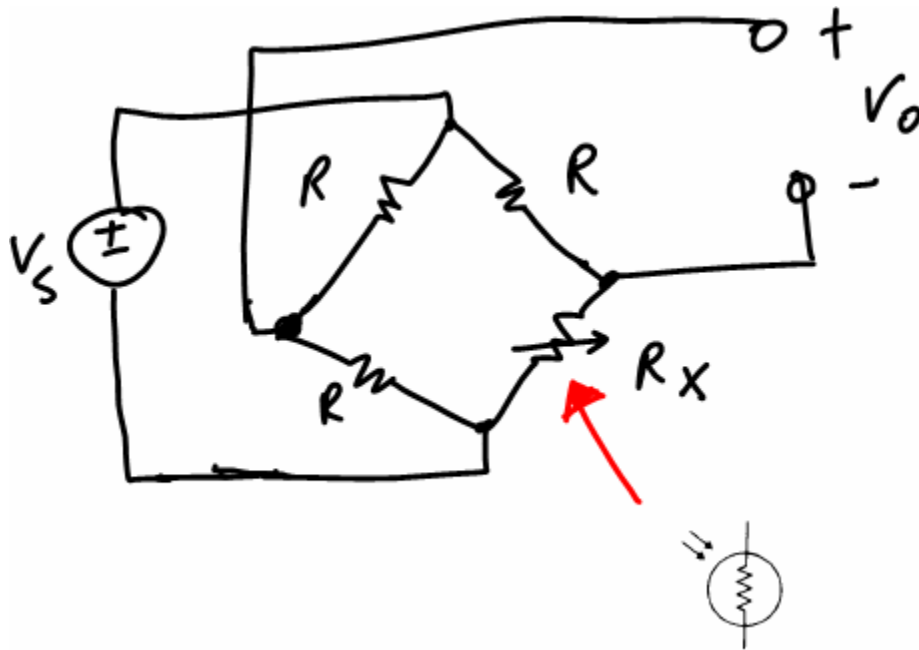
The CdS cells are bi-directional, which means connection in a circuit is straightforward without worrying about polarity.

**Mobile Studio (MS) 02 - Basic Bridge Circuit Application using CdS cell**

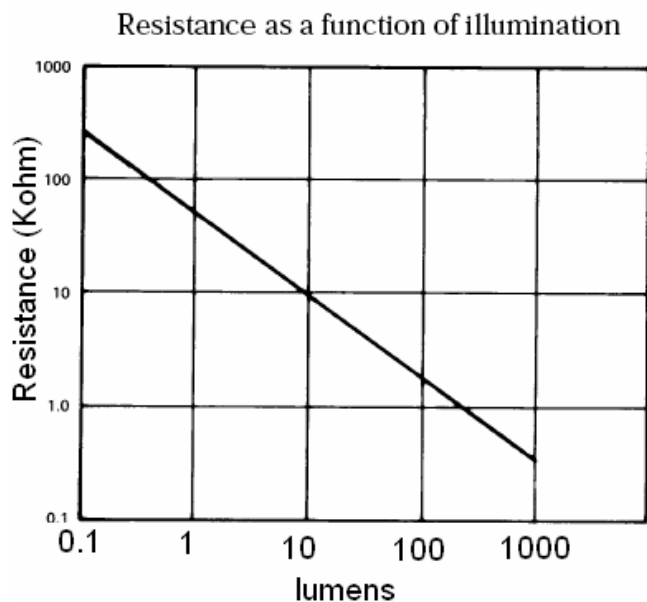
**MS-02 Pre-Lab**

**NAME:** \_\_\_\_\_

1. Express the output voltage  $V_o$  in terms of CdS cell resistance,  $R_x$ , and resistor  $R$  in the bridge circuit below, if  $V_s=5[V]$ . (Show your work)



2. Using the resistance characteristic of the CdS cell in the circuit above, draw a graph of light illumination (in lumens) vs. voltage  $V_o$ , if  $V_s=5[V]$  and  $R=10Kohm$ . (Show your work)



## **Mobile Studio (MS) 02 - Basic Bridge Circuit Application using CdS Cell**

### **REPORT**

Name: \_\_\_\_\_

ID#: \_\_\_\_\_

Group#: \_\_\_\_\_