**ENGG1100 Introduction to Engineering Design**

**Faculty of Engineering**

**The Chinese University of Hong Kong**

**Laboratory 2: Electronics Basics I - Lab Sheet**

Group No: Date:

Student name: , SID :

Student name: , SID :

***After your group has completed this lab work, demonstrate your results to the tutor and ask the tutor (TA) to sign below.* Submit this sheet at the end of this lab.**

***Experiment I: Making Connections and Measurements***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Step 3

|  |  |
| --- | --- |
|  | Value across 1K Ohm resistor |
| Voltage |  |
| Current |  |

Step 4-7 : R2= the potentiometer (Assume Vs =5 Volts)

|  |  |  |  |
| --- | --- | --- | --- |
| VA | Measured R2 (in ohms)  | Calculated Value of R2 (in ohms)  | Ratio A |
| 0.5V |  |  |  |
| 1V |  |  |  |
| 2V |  |  |  |
| 3V |  |  |  |
| 4V |  |  |  |

Step 6:Graph of the resistance R2 versus VASteps 7: Are the measurements and Ratio A agreed with the predictions?

|  |
| --- |
|  |

Step 8: What can you tell about the relationship between VA (Voltage across R2) and Ratio A? (You may plot the relation and comment whether it is linear or non-linear.)

|  |
| --- |
|  |

Write the equation to relate Vs=5V , R1,R2 and VA: Are the measurements agree with the predictions?

|  |
| --- |
|  |

Step 9: What will be VA when R2 is very large (say > 100K)?

|  |
| --- |
|  |

 |

***Experiment II: Resistor Networks***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Step 3,4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Point | Voltage |  | Components | Current across the components |
| A |  |  | 1KΩ Resistor (IB) |  |
| B |  |  | 5.1 KΩ Resistor (IC) |  |
| C |  |  | 10 KΩ Resistor(IA) |  |
| D |  |  | Potentiometer(ID) |  |
|  |  |  | Power Supply(Ipower) |  |
| **What can you tell about the currents measured across the 1 KΩ, 5.1 KΩ and the variable resistor?** *(Hint: write a formula to link up the currents.* IB *= ?,* IPower *= ?)* |

Step 6: Adjust the resistance of the potentiometer to 2 KΩ, 5 KΩ, 8 KΩ, and measure the corresponding voltages VB 2KΩ, VB 5KΩ, VB 8KΩ, at Point B respectively.

|  |  |
| --- | --- |
| Potentiometer Resistance | Voltage at Point B |
| 1.5 KΩ |  |
| 2 KΩ |  |
| 5 KΩ |  |
| 8 KΩ |  |

 |