EAST WEST UNIVERSITY

Department of Computer Science and Engineering

Course Title: Electrical Circuits

Course Number: 209

Semester: 4th

Experiment No.: 01

Experiment Title: Introduction to Circuit Elements and Variables

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Date of Performance: 20-11-21

Date of Report Submission: 07-01-2022

Objectives of the Experiment:

1. To get familiar with circuit variables (voltage and current) and circuit elements (voltage source and resistance).
2. To learn how to measure dc voltage across a circuit element using a voltmeter.
3. To learn how to measure dc current through a circuit element using an ammeter.
4. To learn how to measure resistance of a resistor using a multimeter.
5. To verify Ohm's Law.

Circuit Diagram:

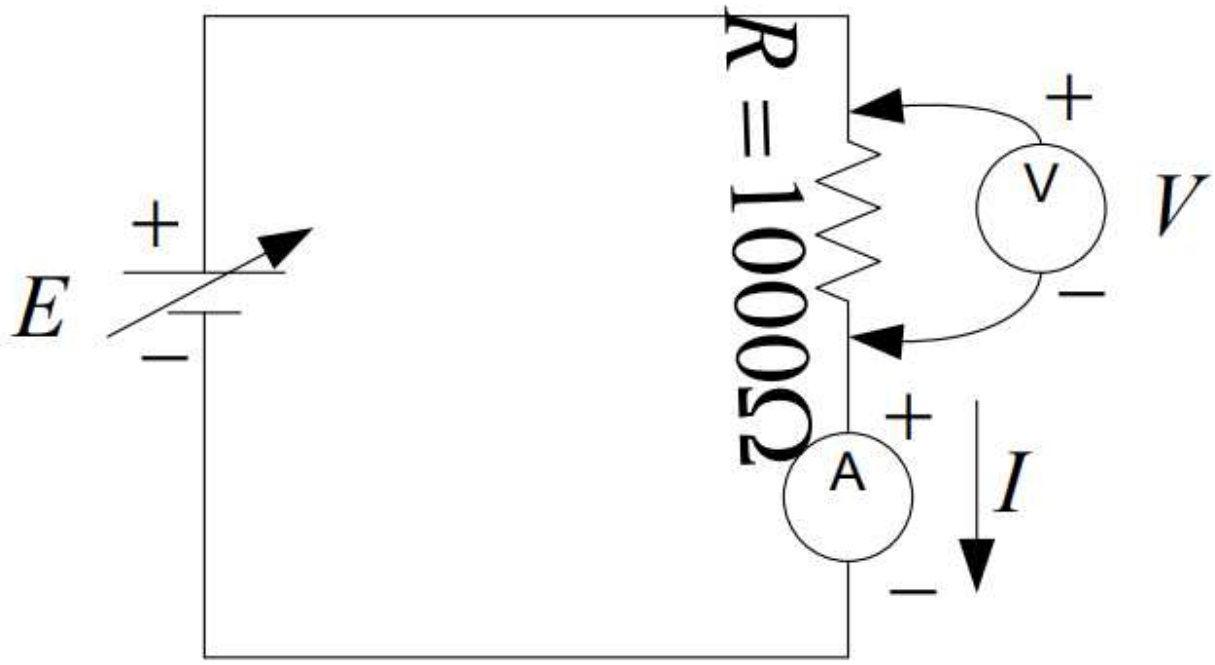

Figure: Circuit for Experiment

Table 01 .Experimental Datasheet:

Observation Number	Set value of *E* (*V*)	Measured value Of *V* (*V*)	Measured value Of *I* (*mA*)	Measured value of *R* ((Ω)
1	5	5	5	1000
2	6	6	6	
3	7	7	7	
4	8	8	8	
5	9	9	9	
6	10	10	10	

Answers to the post lab report questions:01

1. $I = \frac{V}{R} = \frac{5}{1000}$ mA= 5 mA
2. $I = \frac{V}{R} = \frac{6}{1000}$ mA= 6 mA
3. $I = \frac{V}{R} = \frac{7}{1000}$ mA= 7 mA
4. $I = \frac{V}{R} = \frac{8}{1000}$ mA= 8 mA
5. $I = \frac{V}{R} = \frac{9}{1000}$ mA= 9 mA
6. $I = \frac{V}{R} = \frac{10}{1000}$ mA= 10 mA

There is no discrepancy in PSpice.

Answers to the post lab report questions:02

1. $R = \frac{V}{I} = \frac{5V}{5\ mA}$ = 1000 **Ω**
2. $R = \frac{V}{I} = \frac{6V}{6\ mA}$ = 1000 **Ω**
3. $R = \frac{V}{I} = \frac{7V}{7\ mA}$ = 1000 **Ω**
4. $R = \frac{V}{I} = \frac{8V}{8\ mA}$ = 1000 **Ω**
5. $R = \frac{V}{I} = \frac{9V}{9\ mA}$ = 1000 **Ω**
6. $R = \frac{V}{I} = \frac{10V}{10\ mA}$ = 1000 **Ω**

There is no discrepancy in PSpice.

Answers to the post lab report questions:03

There is no discrepancy in PSpice and the set of value of *E* and the measured value of V is the same.

Answers to the post lab report questions:04

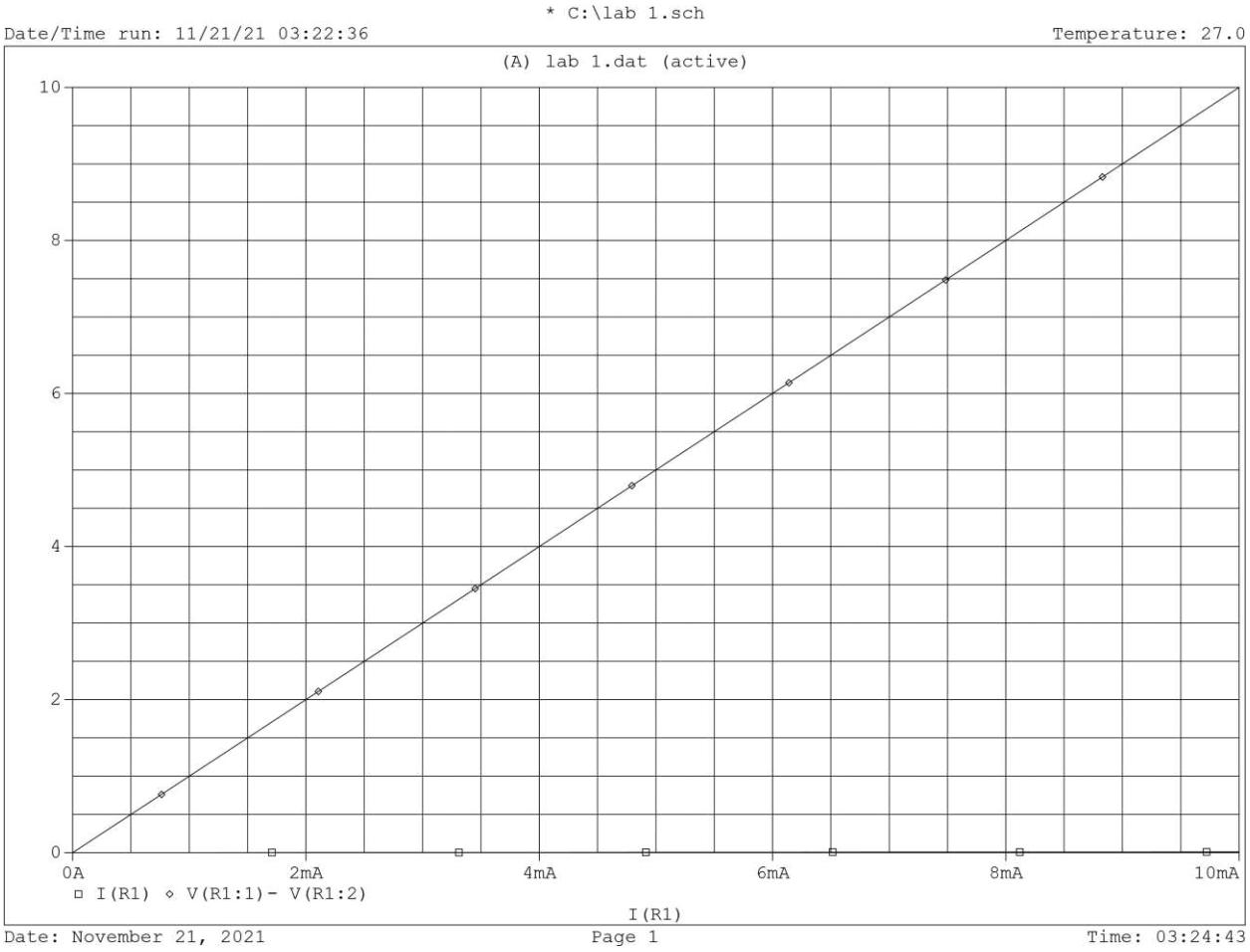

Figure: Graph for step 4

We know from ohm's law, $R = \frac{V}{I}$ and for graph $m = \frac{y}{x}$ the resistance ,

$m = \frac{y}{x} = \frac{5V}{5mA}$=1000 ohm.

There is no discrepancy in PSpice.

Answers to the post lab report questions:05

A multimeter can be used as ammeter, voltmeter and ohmmeter. For measuring voltage , we use voltmeter in parallel connection and for measuring current , we use ammeter in series connection. For measuring voltage and current there wil be a nob which we need to put in the range.

Conclusion:

We got familiar with circuit variables (voltage and current) and circuit element (voltage source and resistance) and verified ohm's law and found no discrepancy in PSpice.