University of California, Los Angeles

School of Engineering and Applied Science

Department of Electrical and Computer Engineering

Name: <>

UID: <>

Experiment 2: Simple Resistive Networks

ECE11L Lab

Instructor: Sudhakar Pamarti

1. Superposition

<Insert One Sample Image of Test-Setup>

Theoretical Analysis:

<Hand-written analysis for Voltage across R3>

Observed Results:

Sources	R_3 Voltage	R_3 Current (Computed)
+5V only		
-5V only		
Sum of above		
Both sources		

Discussion

- How did the theoretical results compare with experimental values?

<Answer in 1-2 lines.>

2. Thevenin/Norton Equivalent

<Insert One Sample Image of Test-Setup>

Impedance Measurement

Theoretical Resistance (Ω)	**Measured Resistance (Ω)**
$R_1 = 5.6k\Omega$	
$R_2 = 680\Omega$	
$R_3 = 2.2k\Omega$	

Theoretical Analysis:

V_{TH}, V	I_N, mA	$R_{TH/N}$, Ω

Practical Open Circuit Voltage, Equivalent Resistance in Original Circuit:

V_{OC}, V	I_{SC}, mA	R_{eq}, Ω

Practical Observations in Thevenin Equivalent Circuit:

Voltage across Load Resistor	

Discussion

- How did the voltage across the load compare between the original circuit and Thevenin equivalent circuit?

<Answer in 2-4 lines. Include readings in your description for comparison.>

- If our goal is to achieve maximum power dissipation across the load resistance, what load is the best choice? How does this value compare with the Thevenin equivalent resistance?

<Answer in 2-3 lines.>

3. Wheatstone Bridge

<Insert One Sample Image of Test-Setup>

- Derive the expression for the voltage ‘V’ across Wheatstone bridge in terms of resistance values.

- What are the resistance values obtained for the Wheatstone bridge?

$R_1 =$

$R_2 =$

$R_3 =$ <Specify resistor value or potentiometer value. Mention which one you did use.>

Discussion

- The light sensing circuit built earlier was susceptible to input voltage change, and was also biased away from zero. Both characteristics are not desirable in general. How does the temperature sensing circuit employing Wheatstone bridge compare?

<Answer in 2-4 lines.>