NATIONAL UNIVERSITY OF SCIENCES AND TECHNOLOGY

COLLEGE OF ELECTRICAL AND MECHANICAL ENGINEERING

Network Analysis

Experiment # 1

THEVENIN THEOREM

GROUP MEMBERS:

1) _____

2) _____

3) _____

4) _____

Objectives:

- *To verify Thevenin theorem.*
- *To draw Thevenin equivalent of a passive resistive network.*

Instructor: _____

Date: _____

THEORY

Any two terminal, bilateral, linear networks can be replaced by an equivalent voltage source in series with an equivalent resistance connected across the load.
The load current is given by

$$I_L = V_{TH} / (R_{TH}+R_L)$$

EQUIPMENT

Power supply	Variable resistor
Digital multimeter	Jumper wires
Resistors: 10KΩ (3), 4.7 KΩ, 1 KΩ	Bread board

CIRCUIT DIAGRAM

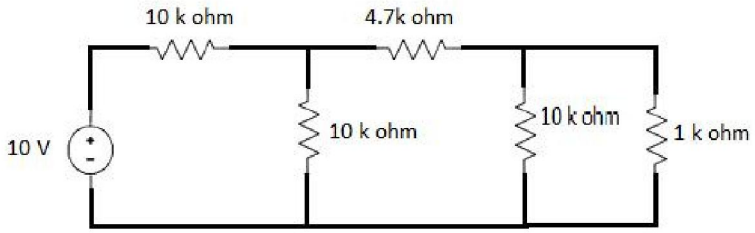

Figure 1: Actual Network

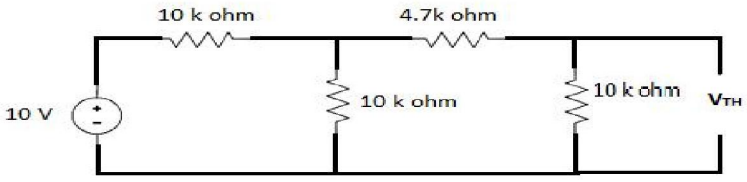

Figure 2: Measuring V_{TH}

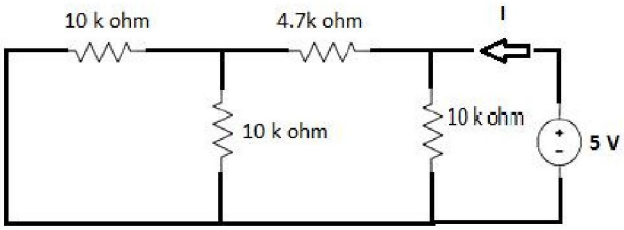

Figure 3: Finding R_{TH}

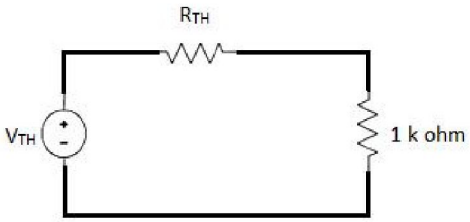

Figure 4: Thevenin Equivalent Circuit

PROCEDURE

1. Connect the components as shown in Figure 1.
2. Measure the voltage (V_{L1}) and current (I_{L1}) in 1 kΩ resistance and note these values.
3. Remove 1 kΩ resistor as shown in Figure 2 and find V_{TH} across the open circuit terminals from where 1 kΩ was removed.
4. Connect the circuit according to Figure 3 and measure the current I to find R_{TH}.
5. Now connect the circuit as shown in Figure 4 by changing resistance of variable resistor equal to R_{TH} and voltage of power supply adjusted to V_{TH}.
6. With this Thevenin equivalent circuit, measure the voltage (V_{L2}) and current (I_{L2}) in 1 kΩ resistance and note these values.
7. Compare V_{L2} and I_{L2} with V_{L1} and current I_{L1}. If these values are same, Thevenin theorem is verified.

RESULTS

	Theoretical Results	Measured Results
V_{L1}		
I_{L1}		
V_{TH}		
R_{TH}		
V_{L2}		
I_{L2}		