



Cyprus International University

Department of Electrical and Electronic Engineering

Circuit Theory 1  
EELE202

**Experiment 3**  
**Thevenin Theory**

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**Object:** To find a method of simplifying a network in order to obtain the current flowing in one particular branch of the network.

**Step 1:** Construct the circuit in Fig 1. and measure I.

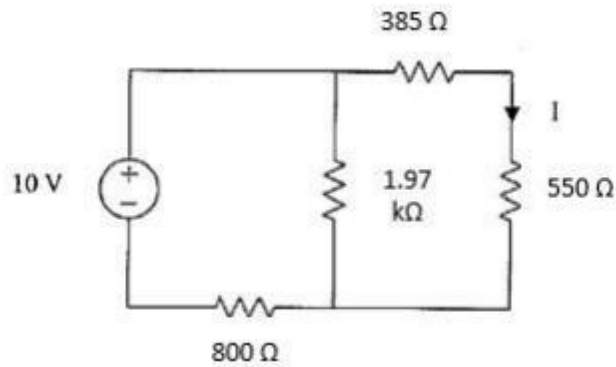


Fig 1.

$$I = 0.01 \text{ mA}$$

**Step 2:** Construct the circuit in Fig 2. and measure  $V_{oc}$ .

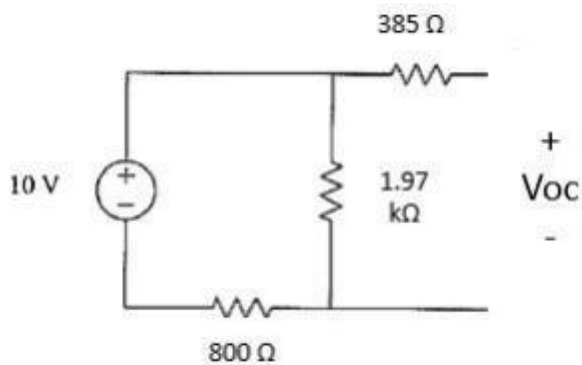


Fig 2.

$$V_{oc} = 7.17 \text{ V}$$

**Step 3:** Construct the circuit in Fig 3. and measure  $I_{sc}$ .

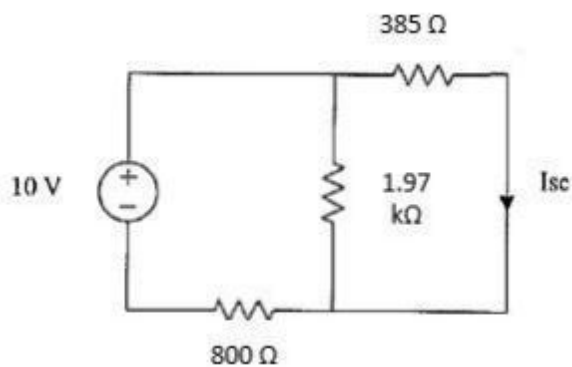


Fig 3.

$$I_{sc} = 0.07 \text{ mA}$$

**Step 4:** Construct the circuit in Fig 4. and measure  $I_T$  and fill Table 1.

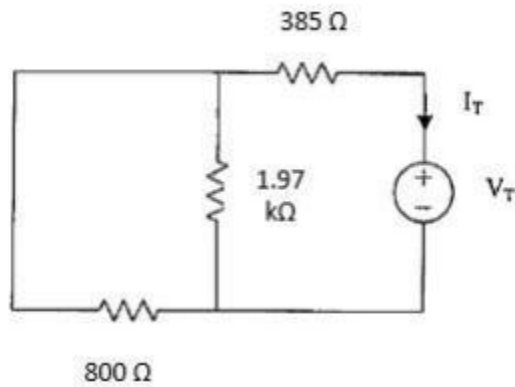


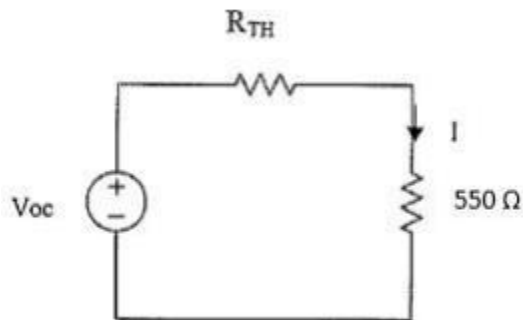
Fig.4.

Table1:

$V_T(V)$	$I_T(mA)$	$R_{TH}(k\Omega)$
2.00	0.01	200
4.00	0.03	133.3
7.00	0.06	116.7
10.00	0.09	111.11

Average value of  $R_{TH}$ : 140.28k $\Omega$

**Step 5:** Construct the thevenin equivalent of the original circuit in Fig. 3.5 by using  $V_{oc}$  and  $R_{TH}$  and measure  $I$  value again to satisfy it with the one found in the first step.



$I=0.013mA$

Fig.5.

**Conclusions** (write a small paragraph of what you got from the experiment:

In the first figure, after setting up the circuit, we measured  $I$  to be 0.01MA. In the second circuit, we measured the  $V_{OC}$  to be 7.17v, we got the  $I_{SC}$  in the third circuit. In the fourth circuit, we measured  $I_T$  and completed the table. In the last circuit, we got  $I$  to be 0.013MA satisfying the first circuit  $I$ , the values of the  $I$  are closed, the little differences in the  $I$  must be due to some lab errors. The experiment was successful and Thevenin theory was proved.