



Cyprus International University

Department of Electrical and Electronic Engineering

Circuit Theory 1  
EELE202

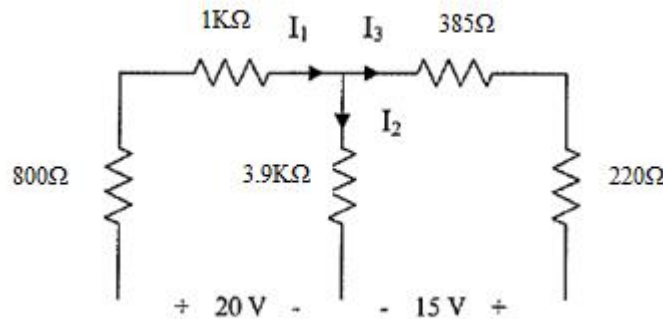
**Experiment 4  
Superposition**

**Spring 2022-2023**

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**Object:** To investigate the effects of more than one voltage source in a network.

- Construct the circuit in Fig.1 and measure  $I_1$ ,  $I_2$  and  $I_3$ .



$$I_1 = 0.002 \text{ mA}$$

$$I_2 = 0.005 \text{ mA}$$

$$I_3 = 0.005 \text{ mA}$$

- Disconnect 15 V supply and construct the circuit in Fig.2 and measure  $I'_1$ ,  $I'_2$  and  $I'_3$ .

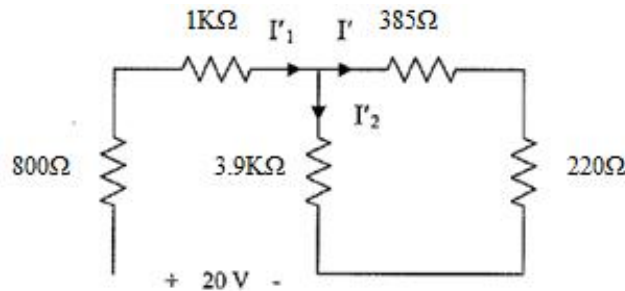


Fig.2

$$I'_1 = 0.005 \text{ mA}$$

$$I'_2 = -0.001 \text{ mA}$$

$$I'_3 = -0.002 \text{ mA}$$

- Disconnect 20 V supply and construct the circuit in Fig. 3 and measure  $I''_1$ ,  $I''_2$  and  $I''_3$ .

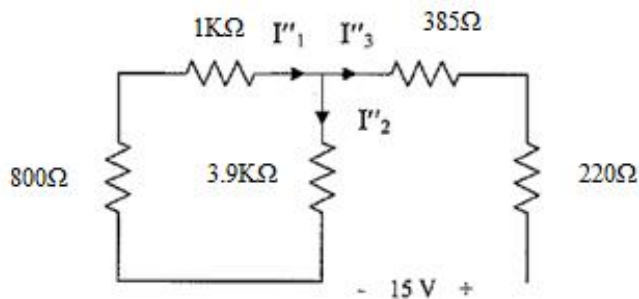


Fig.3

$$I''_1 = -0.002 \text{ mA}$$

$$I''_2 = 0.006 \text{ mA}$$

$$I''_3 = 0.007 \text{ mA}$$

**Questions:**

1. Do the current directions agree with those shown in Fig.1 ? ANS: YES
2. Again, do the directions of the currents agree with those shown in Fig.2? ANS: NO
3. Can you notice any relationship between  $I_1$  and  $I'_1$ ,  $I''_1$ ? ANS: YES
4. Does the same relationship hold for  $I_2$  with  $I'_2$  and  $I''_2$ , also  $I_3$  with  $I'_3$  and  $I''_3$ ? ANS: YES
5. Does the algebraic sum of the currents due to individual source equal the total currents due to the two sources? ANS: YES

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

We got the values for the  $I$ 's. We had some little differences in the value due to lab error but superposition theory was proved and the experiment was successful.