Faculty Of Information Technology

Electrical and Computer Engineering Department

CIRCUITS AND ELECTRONICS LABORATORY (ENEE2103)

Prelab Experiment#2

"Circuit Laws & Theorems"

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Section 3

Due to:17-2-2019

Part A: KVL & KCL

Bias simulation:

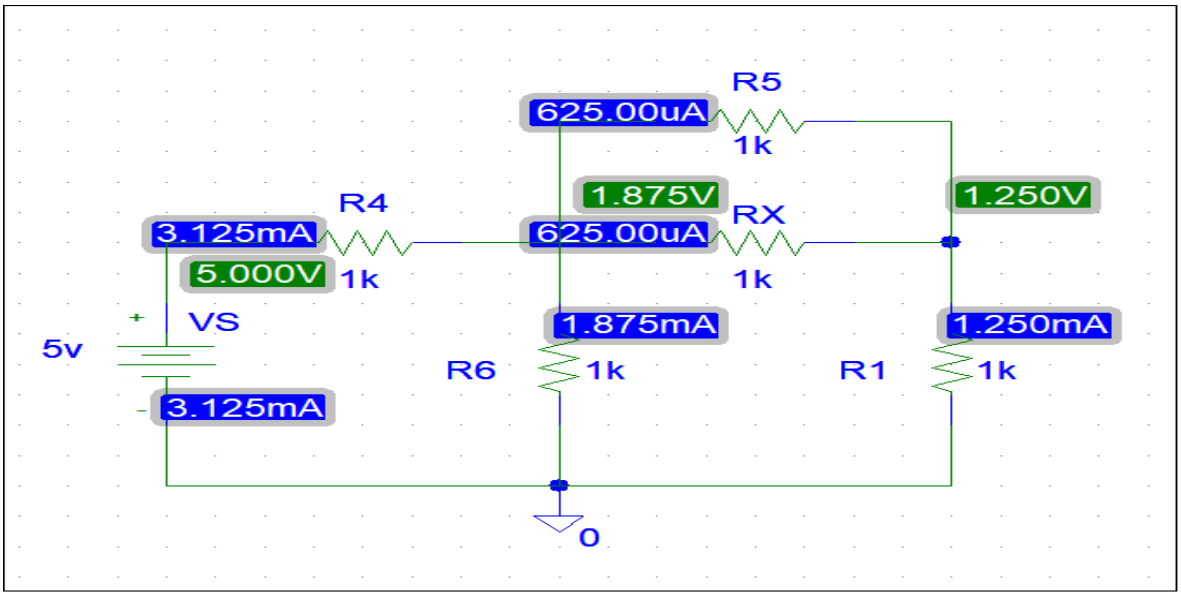

Fig A

Part B: Voltage & Current Division

- ***Current Division***

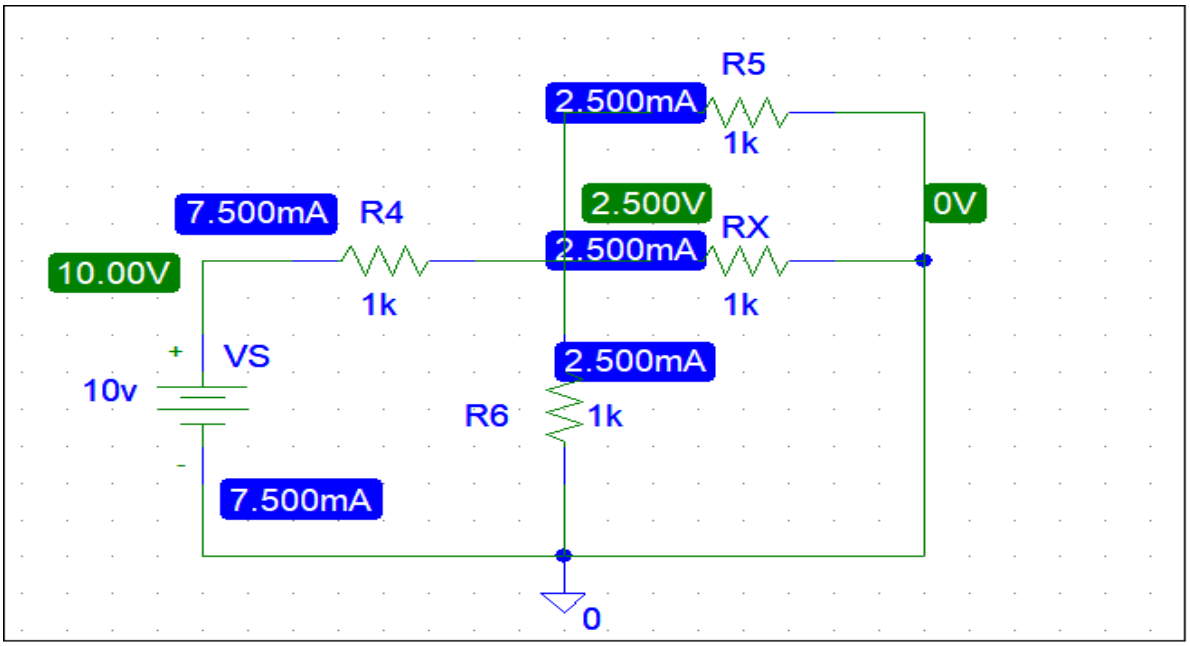

Fig B

Part C: Superposition

- Vs1 = 5v, Vs2 = 10v >> VR6 = 4v & IR6 = 4mA

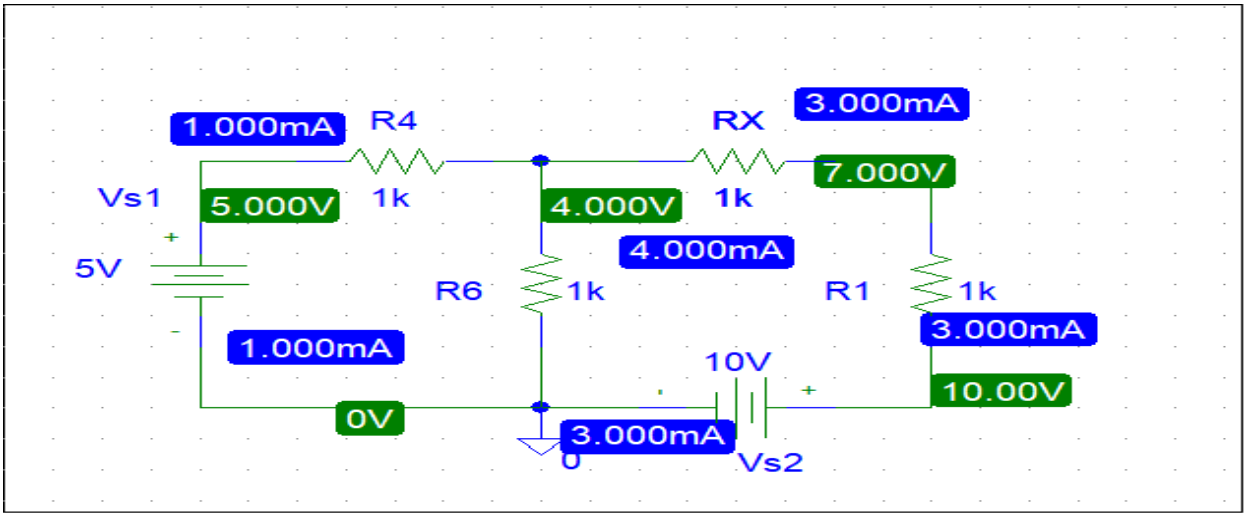

Fig C.1

- Vs1 = 0v, Vs2 = 10v >> VR6 = 2v & IR6 = 2mA

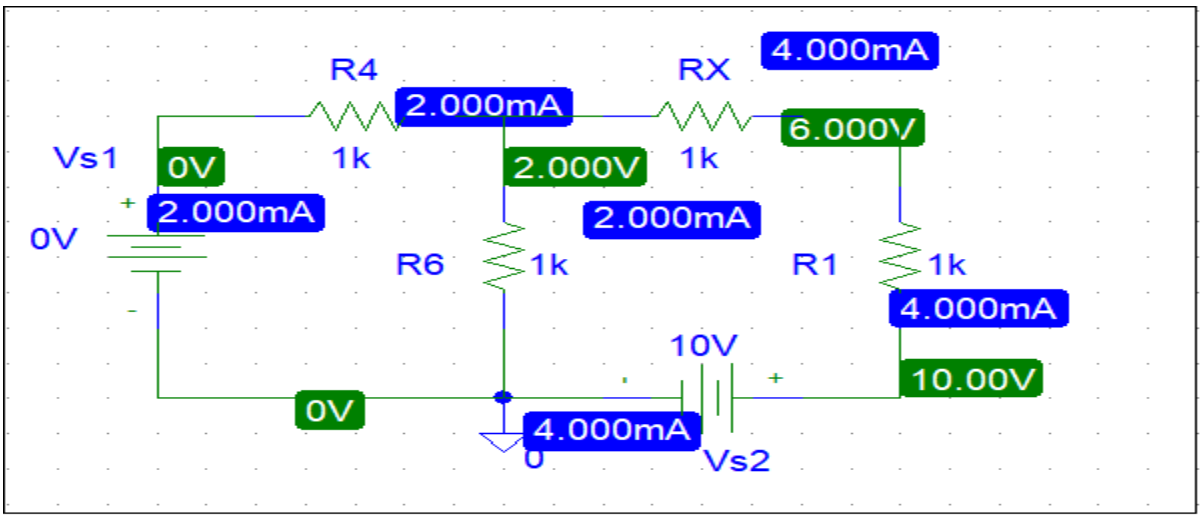

Fig C.2

- Vs1 = 5v, Vs2 = 0v >> VR6 = 2v & IR6 = 2mA

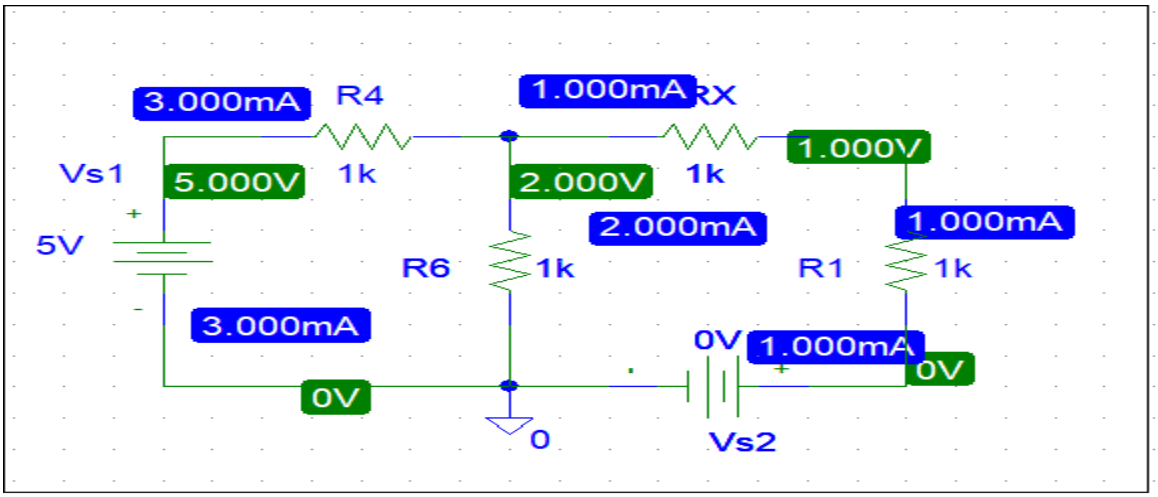

Fig C.3

Part D: Thevinin and Norton equivalent circuits.

Current on R1 =3mA, and the voltage across R1= 7v – 10v = -3v.

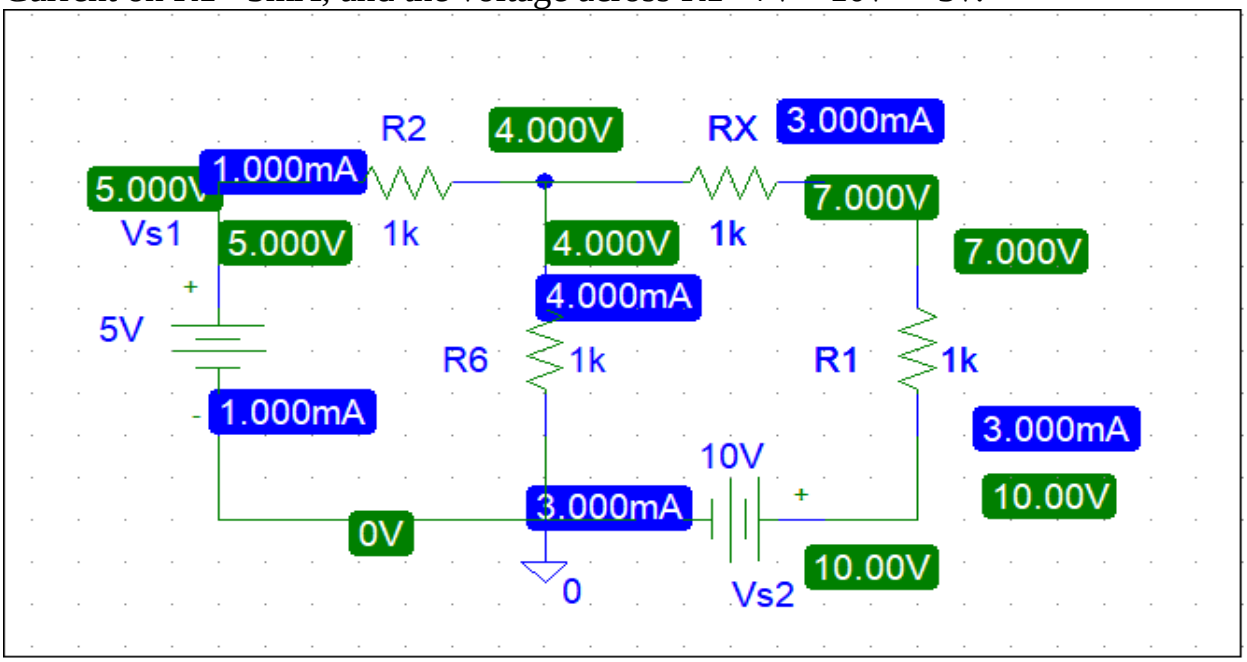

Fig D.1

- Open Circuit:

To measure Roc, I set the resistance on high value, Roc = 2.5 - 10 = -7.5v.

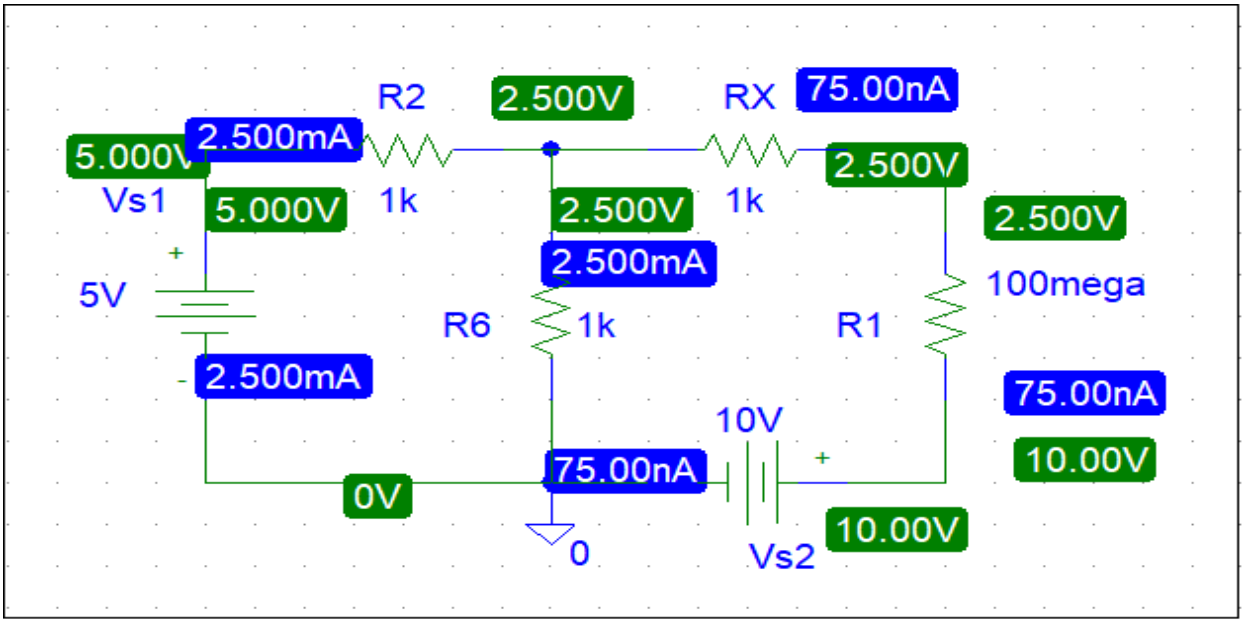

Fig D.2

- Short circuit:

Isc = -5mA.

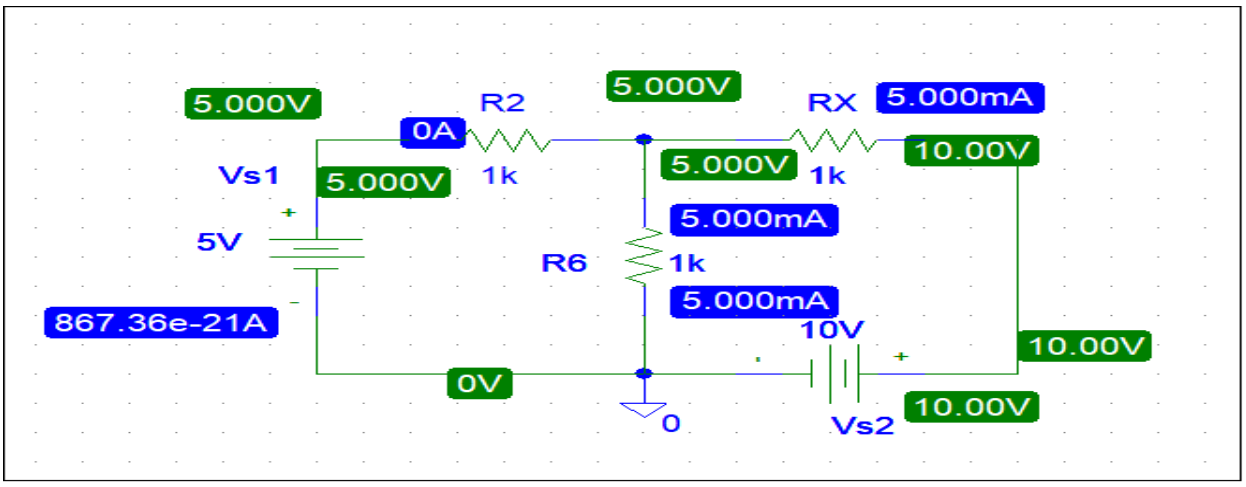

Fig D.3

- without terminals:

Rth = (R2//R6) + Rx = 1.5k.

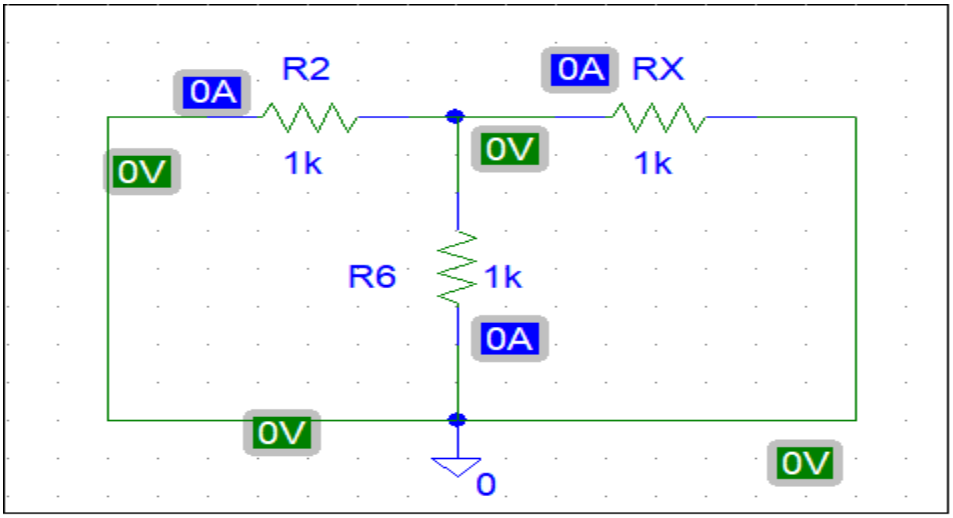

Fig D.4

- Equivalent Thevenin Circuit:

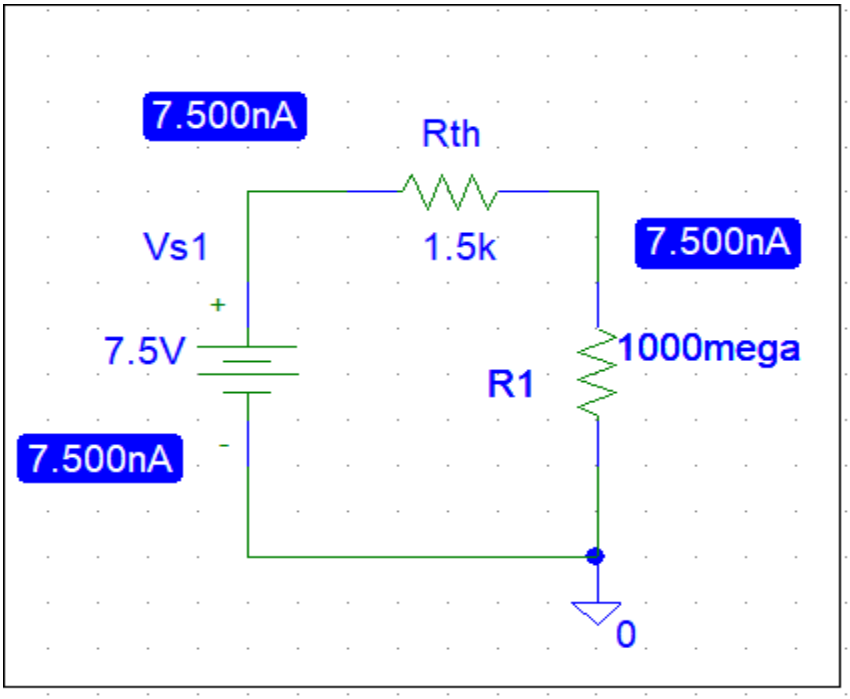

Fig D.5

- After connect R1:

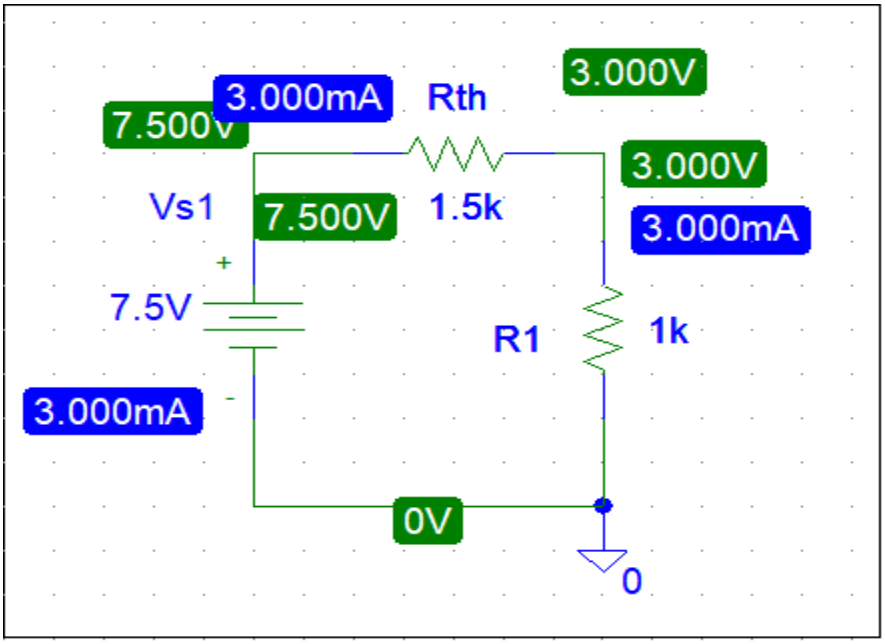

Fig D.6

The voltage across R1 =3 volt and this value is equal to the value we measured o step 2.

- After this comparison we conclude that the relationship between the two circuits is equivalent circuits but with different design.