BRAC UNIVERSITY
DEPT. OF COMPUTER SCIENCE AND ENGINEERING
COURSE NO.: CSE250
Circuits and Electronics Laboratory

Experiment No. 2

Name of the Experiment:

Verification of KCL and KVL

KVL

OBJECTIVE:
This experiment is intended to verify Kirchhoff's voltage law (KVL) with the help of series circuits.

THEORY:
KVL states that around any closed circuit the algebraic sum of the voltage rises equals the algebraic sum of the voltage drops.

APPARATUS:
- One DC Ammeter (0 - 1A)
- One multimeter
- Three Resistors
- One DC power supply

PROCEDURE:

- Connect the resistors R_1, R_2 and R_3 in series to a DC power supply as shown in Fig 1.

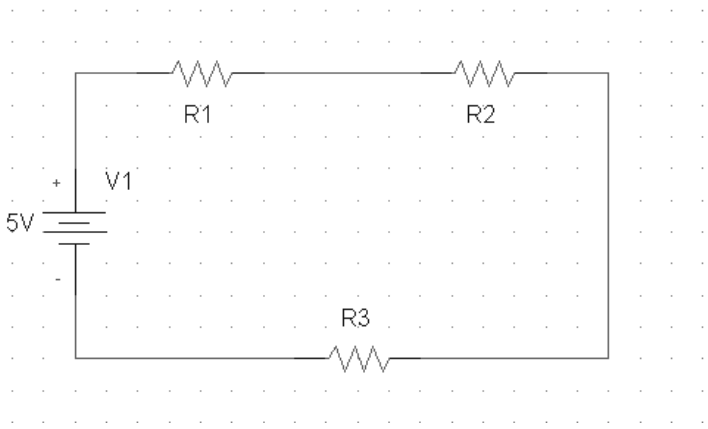

Fig. 1

- Take readings of V_1, V_2, V_3, V_s using multimeter . Take two sets of reading and enter them in the table shown below

- Verify KVL as $V_S = V_1+V_2+V_3$ for each set of readings.

- Calculate the theoretical values of V_1, V_2 & V_3 & note them down in 'Theoretical Observation' row in table
  Use voltage divider rule as stated below to get these values:

  $V_1= (R_1/ R_e)* V;$ $V_2= (R_2/R_e)* V;$ $V_3= (R_3/R_e)* V$

  Where, $R_e= R_1+R_2+R_3$

TABLE 1: Verification of KVL.

Observation	R1	R2	R3	V	V1	V2	V3
Experimental							
Theoretical							

REPORT:
1. State the rules of connecting voltmeter and ammeter in the circuit.
2. Comment on the results obtained and discrepancies (if any).

KCL

OBJECTIVE:

This experiment is intended to verify Kirchhoff's current law (KCL) with the help of a simple parallel circuit.

THEORY:

KCL states that the algebraic sum of the currents entering any node equals the sum of the currents leaving the node.

APPARATUS:

- One DC Ammeter (0 - 1A)
- Three resistors
- One multimeter
- One DC supply

PROCEDURE:

- Connect the resistors in parallel across the power supply as shown in figure2

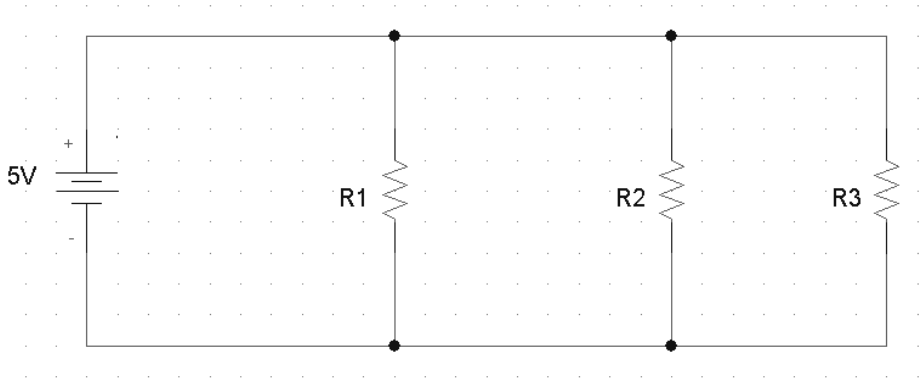

Fig.2

- Measure V_S, I_O, I_1, I_2, I_3. Take two sets of reading.
- Verify KCL as $I_S = I_1+I_2+I_3$ for each set of readings.
- Calculate the theoretical values of I, I1, I2 & I3 & note them down in 'theoretical observation' row in table

  Use the following to get these values:

  I1=V/R1; I2=V/R2; I3=V/R3; I=I1+I2+I3

TABLE 1: Verification of KCL.

Observation	R1	R2	R3	V	I	I1	I2	I3
Experimental								
Theoretical								

REPORT:

1. Comment on the obtained results and discrepancies (if any).