Exp No: 1 DATE:	VERIFICATION OF KIRCHOFF'S LAWS

AIM:

To verify Kirchhoff's voltage law and kirchhoff's current law both theoretically and practically for a given DC circuit.

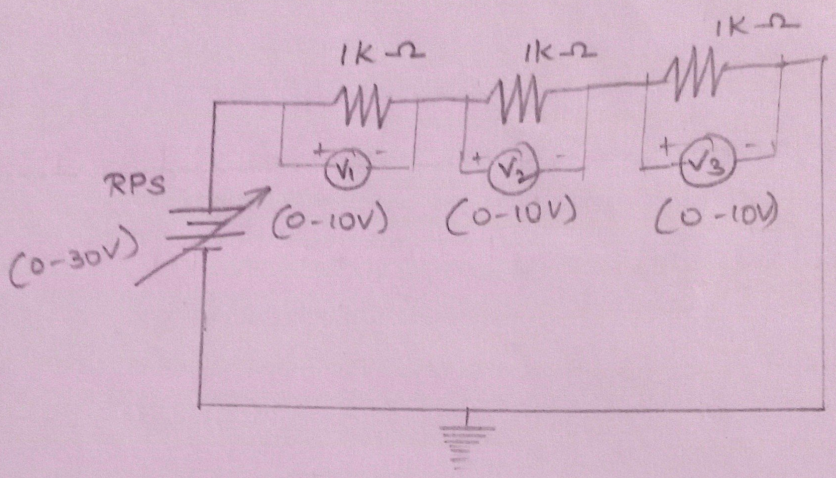
APPARATUS REQUIRED:

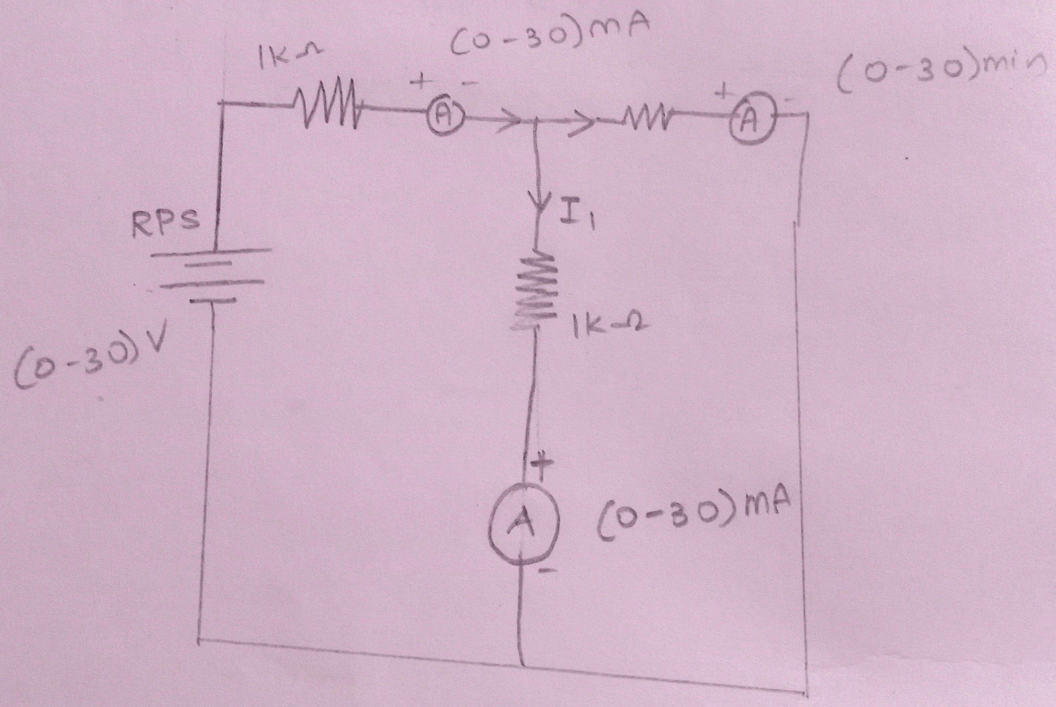
SL.NO	APPARATUS	SPECIFICATION	QUANTITY
1.	Regulated Power supply (RPS)	(0-30) V	1
2.	Voltmeter	(0-30V) MC	3
3.	Ammeter	(0-10mA) MC	3
4.	Resistors	1KΩ	3
5.	Bread board	-	1

PROCEDURE:

* Give connections as per the circuit diagram.
* Switch ON the supply, vary the RPS (Regulated Power Supply) and set a particular input voltage.
* Note down the readings of ammeters and voltmeters and tabulate them.
* Vary the RPS for different input voltages and note down the readings of all the meters.
* Reduce the RPS to its Minimum ~~Maximum~~ value and switch OFF the Supply.
* Using the tabulated values, verify Kirchoff's laws practically, and verify it theoretically.

CIRCUIT DIAGRAM





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TABULAR COLUMN :

V (volts)	V_1 (volts)	V_2 (volts)	V_3 (volts)	$V = V_1 + V_2 + V_3$ (volts)	I (amps)	I_1 (amps)	I_2 (amps)	$I = I_1 + I_2$ (amps)
2	0.91	0.93	0.9	2.74	6.0	3.07	3.07	6.15
6	2.0	1.98	6.63	12.00	2.0	5.99	5.99	11.98
9	3.15	3.21	9.35	17.7	3.15	8.93	8.96	17.89

CALCULATIONS:

- Practical Verification:

  V/I should be constant (ohm's law)

  V should be equal to $(V_1 + V_2 + V_3)$

  I_1 should be equal to $(I_2 + I_3)$

- Theoretical verification:

By ohm's Law

$$I = \frac{V}{R} = \frac{3}{1.5} = 2mA \qquad I_1 = \frac{I \times R_1}{R_1 + R_2} = 2 \times \frac{1}{2} = 1mA$$

$$I_2 = \frac{I \times I_2}{R_1 + R_2} = 2 \times \frac{1}{2} = 1mA$$

Result:

Thus Kirchoff's current law and Kirchoff's voltage law are verified practically and theoretically.