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EXPERIMENT NO. 2

Objective : To Verify the Ohm's Law

Software used : NI Multisim

Theory :

Ohm's law states that "at a constant temperature, the electrical current flowing through a conductor is directly proportional to the voltage applied across it, and also inversely proportional to the resistance " .

Mathematically can be written as :

$$V \propto I ;$$

$$I = V/R$$

$$V = IR$$

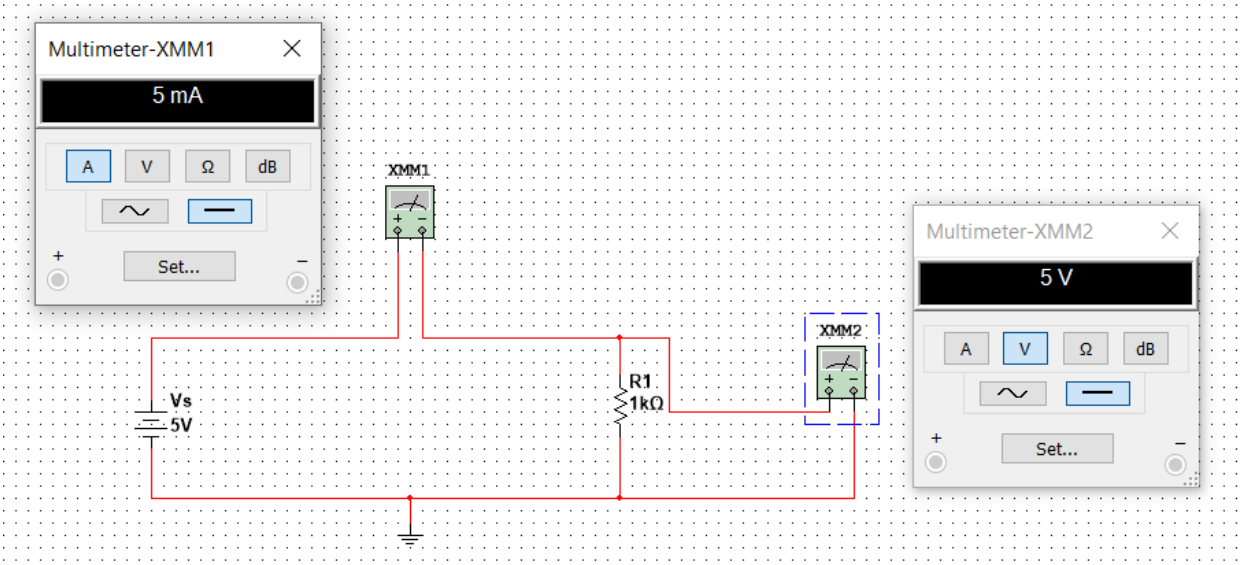
Where ,

V = Voltage measured across the conductor

R = Resistance of the conductor

I = Current through the conductor

CIRCUIT DIAGRAM :



RESULTS AND OBSERVATIONS :

			THEORITICAL		MUTISIM	
S.NO.	**Vs**	**R(ohm)**	**I**	**Vout**	**I**	**Vout**
1.	5V	1K	5mA	5V	5mA	5V
2.	8V	3K	2.667mA	8.001V	2.667mA	8V
3.	12V	8K	1.5mA	12V	1.5mA	12V
4.	16V	9K	1.778mA	16.002V	1.778mA	16V
5.	18V	12K	1.5mA	18V	1.5mA	18V

EXPERIMENT NO.4

Objective : To verify the Voltage and Current division Principle .

Software used : NI Multisim

Theory :

Voltage division rule states that “The voltage across any resistor in a series connection of resistors is equal to the ratio of the value of the resistor divided by the total resistance of the circuit ” .

$$\mathbf{Vout = (Vs * R1) / (R1 + R2)}$$

$$\mathbf{Vout = (Vs * R2) / (R1 + R2)}$$

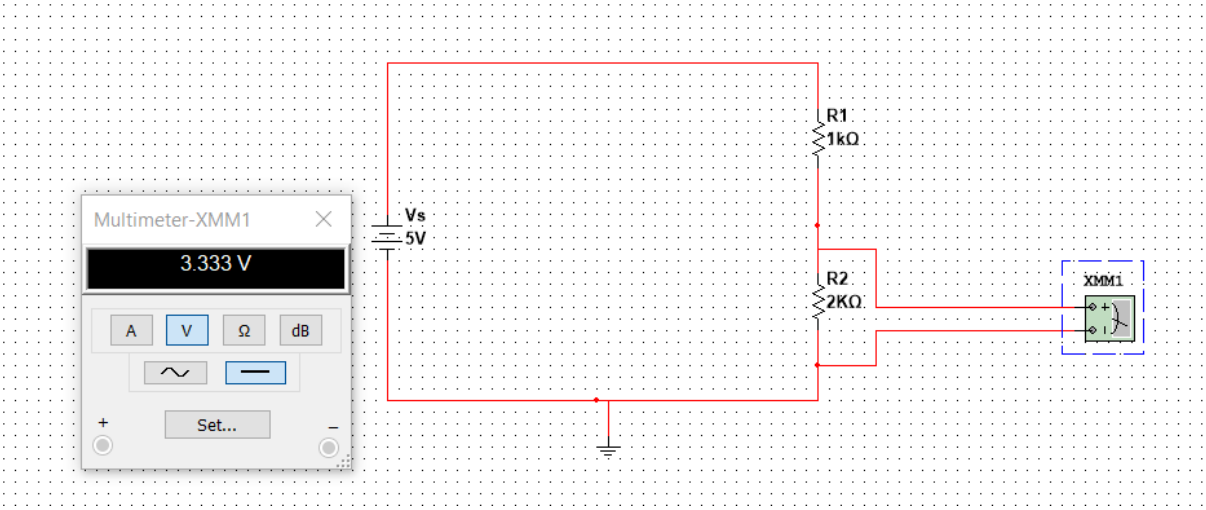
Current division rule states that “The current in any parallel branches of the circuit is equal to the ratio of opposite branch resistance to total resistance , multiplied by total current . The current division rule determines the current across the circuit impedance ” .

$$I1 = (Is * R1) / (R1 + R2)$$

$$I2 = (Is * R2) / (R1 + R2)$$

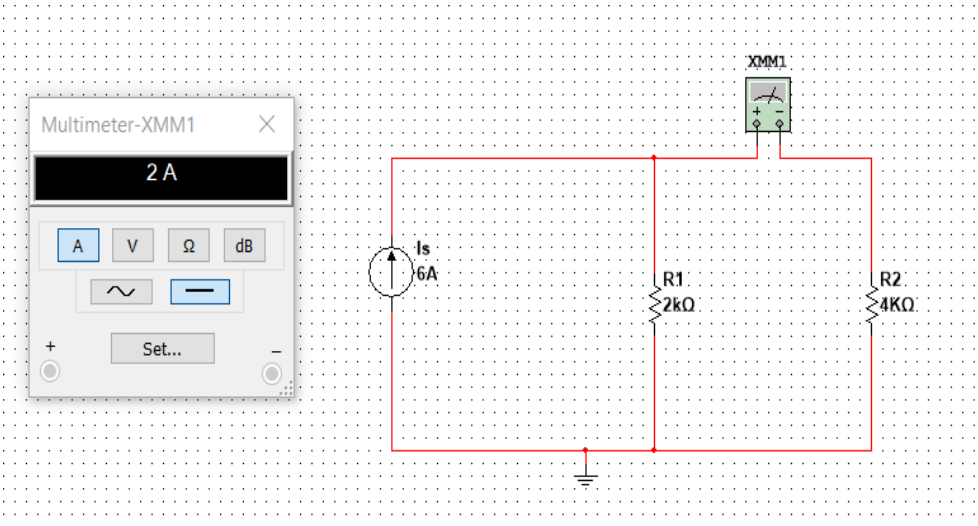
Circuit Diagram :

Voltage division principle :

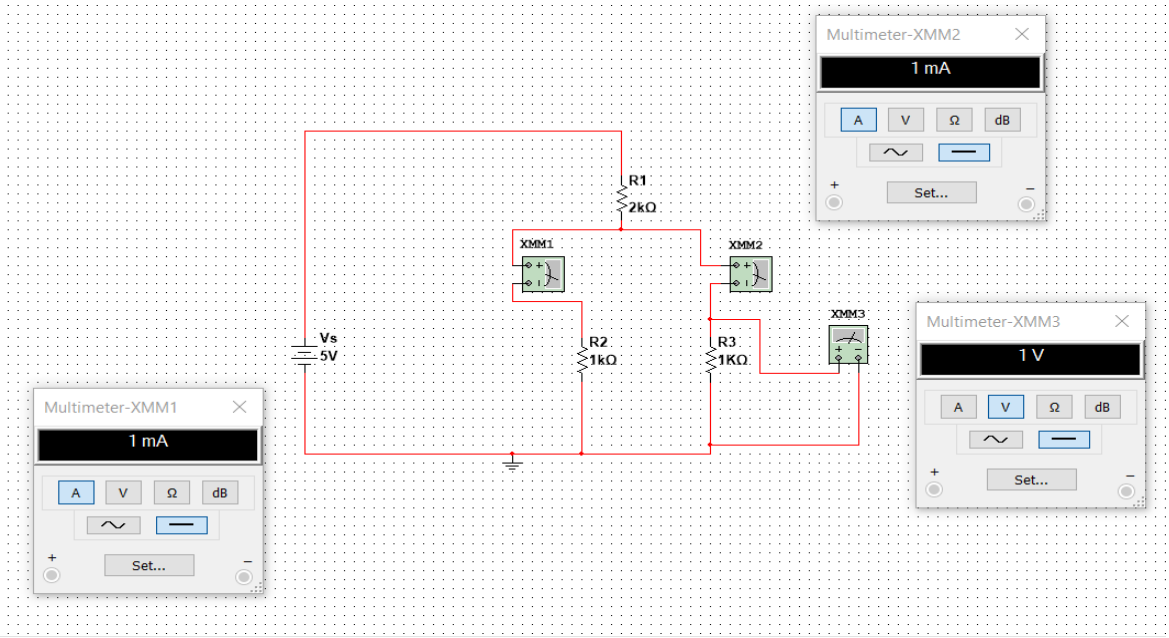


Circuit – 1

Current division principle :



Circuit - 2



Circuit – 3

RESULTS AND OBSERVATIONS :

For Voltage division principle :

Circuit – 1 :

S.NO.	Vs(volt)	R1(ohm)	R2(ohm)	THEORITICAL Vout	MULTISIM Vout
1.	5	1K	2K	3.333V	3.333V
2.	5	2K	3K	3V	3V
3.	5	2.5K	3.1K	2.767V	2.768V
4.	5	4K	3.2K	2.222V	2.222V
5.	10	6K	4.5K	4.285V	4.286V

For Current division Principle :

Circuit – 2 :

S.NO.	Is(Ampere)	R1(ohm)	R2(ohm)	THEORITICAL Iout	MULTISIM Iout
1.	6	2k	4k	2A	2A
2.	3	2K	4K	1A	1A
3.	5	1.2K	2.5K	1.621A	1.622A
4.	8	1.6K	1.4K	4.266A	4.267A
5.	6	1.8K	1.6K	3.176A	3.176A

Circuit – 3 :

					Multisim values		
S.NO.	**Vs**	**R1(ohm)**	**R2(ohm)**	**R3(ohm)**	**I1**	**I2**	**Vout**
1.	5V	2K	1K	1K	1mA	1mA	1V
2.	6V	1K	2K	2K	1.5mA	1.5mA	3V
3.	8V	2K	2K	1K	2mA	1mA	2V