BE LAB TASK # 04

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Topic: Parallel Resistive Circuit.

TASK:

Observation/Calculations:

Objectives:

A, Identify Parallel Circuits.

B, Calculate and Measure the Resistance of a circuit.

C, Measure the voltage Drop across each individual resistor using Digital Multi-meter.

D, Measure the current flow through each individual resistor using the Digital multi-meter.

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Objective A:

Identify Parallel Circuits.

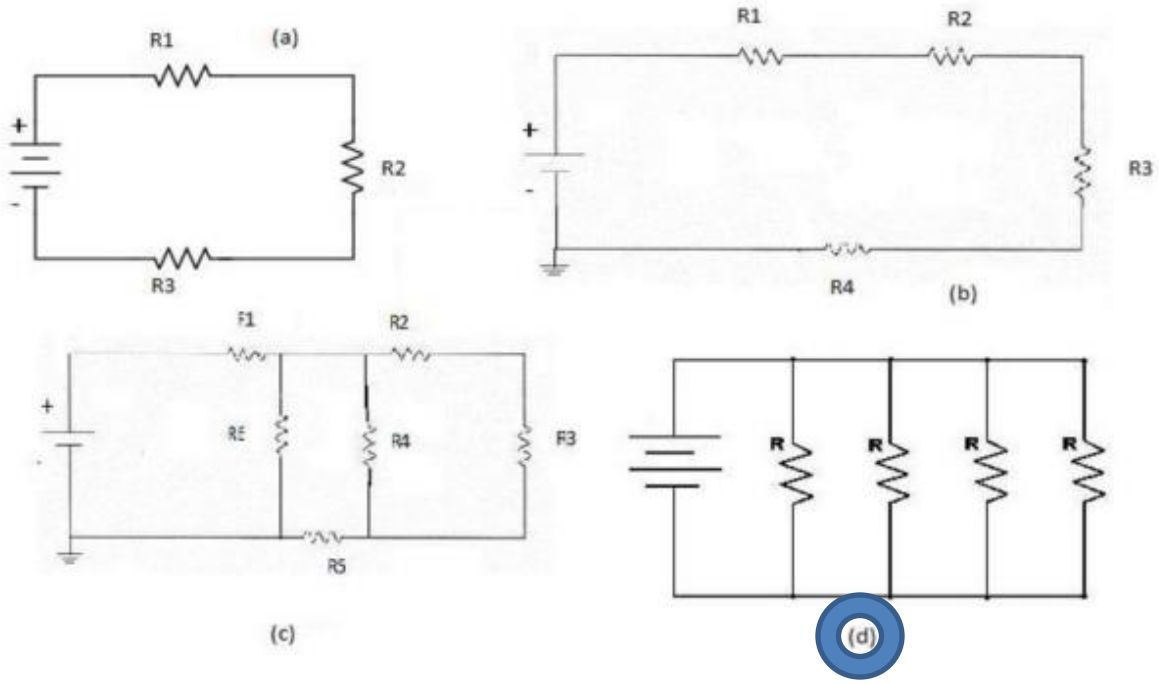


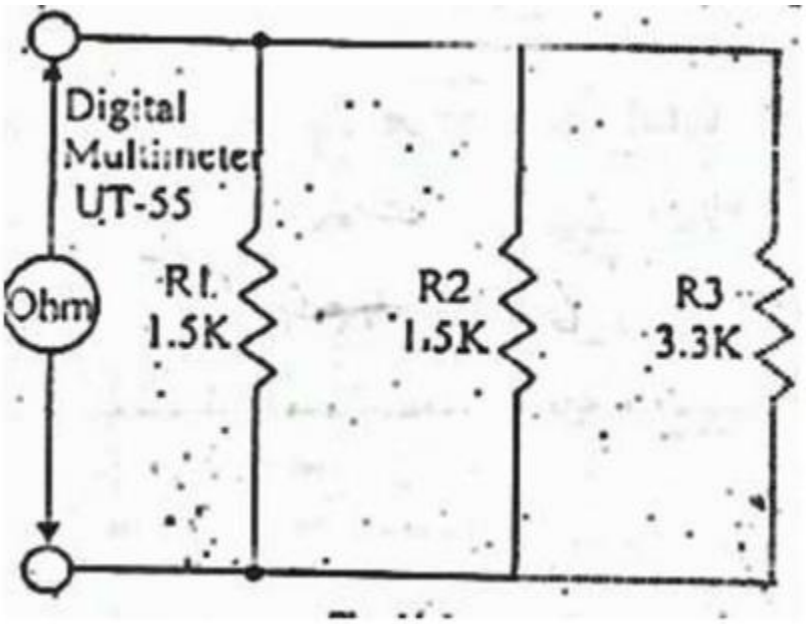
Fig-2

Examine the four circuits as shown in Fig-2. Circle the identifying numbers of the parallel circuits.

Answer: D.

Objective B:

Calculate and Measure the Resistance of a circuit.



$R_{T\ (CALCULATED)}$ = 611.1 Ohms.

$R_{T\ (CALCULATED)}$ (Calculation);

$1/R_T = 1/R_1 + 1/R_2 + 1/R_3$.

$1/R_T = 1/1500 + 1/1500 + 1/3300$.

$1/R_T = 9/5500$ Ohms.

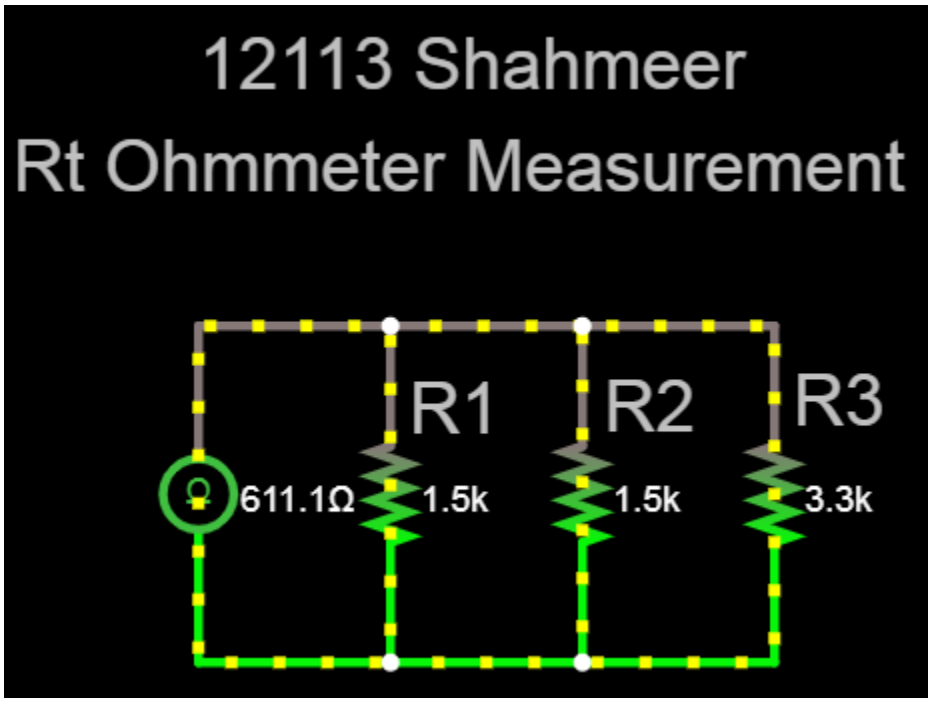
$R_T = 5500/9$ Ohms.

$R_T = 611.1$ Ohms.

$R_T = 0.6111$ K Ohms.

$R_{T\ (OHMMETER)}$ = 611.1 Ohms.

$R_{T\ (OHMMETER)}$ (Calculation);



$R_{T\ (OHM'S\ LAW)}$ = 611.1 Ohms.

$R_{T\ (OHM'S\ LAW)}$ (Calculation);

Data:

R_T=??

V=10 VDC.

I_T=0.016364

Solution:

$V=I_T\ R_T$.

$R_T=V/\ I_T$.

R_T = 10/0.016364.

R_T =611.1 Ohms.

- Are three Total resistance values are approximately same?

Answer: Yes.

- What factors besides resistors tolerance, would contribute to variation among the three values of R_T?

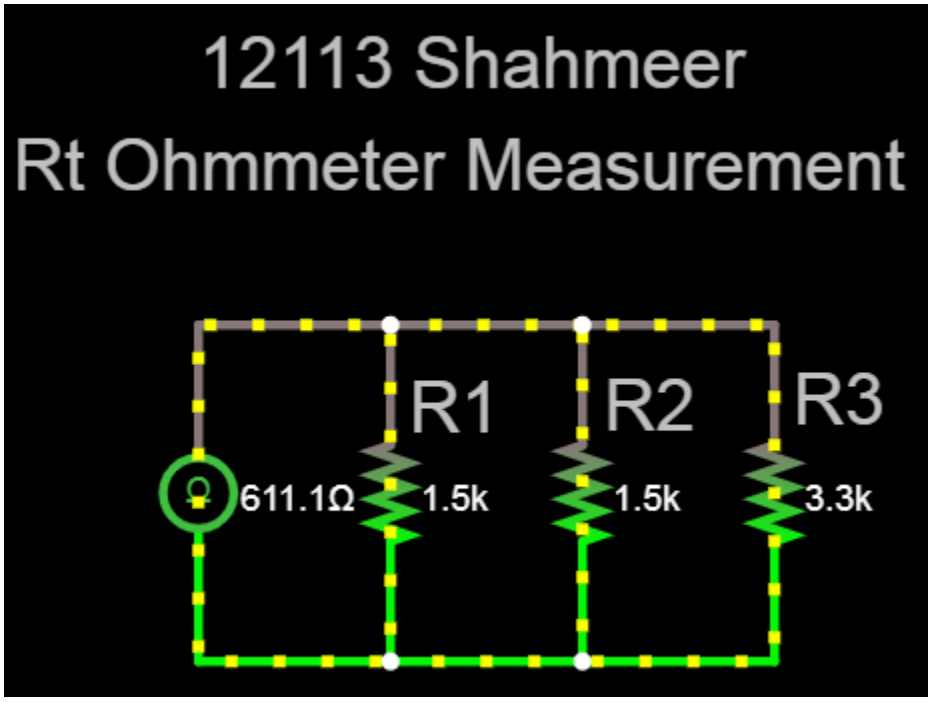
Answer:

1. Human Error.

2. Instrumental Error.

- Connect the resistor r3 into the circuit in parallel with resistors R1 and R2 as shown in Fig-3.

Answer:



- Adjust the power source to 10 VDC.

- Measure the total current flow I_T in the circuit.

I_T = 16.36393 mA DC.

I_T (Calculation);

I_T=??

V=10 VDC.

R_T=611.1 Ohms.

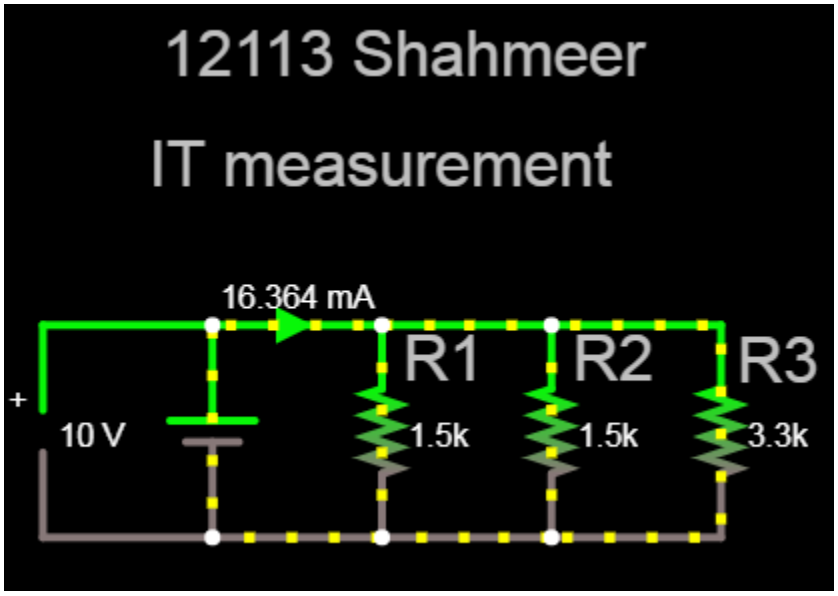
V= I_T R_T.

I_T=V/ R_T.

I_T=10/611.1.

I_T=0.016364 A DC.

I_T=16.364 mA DC.



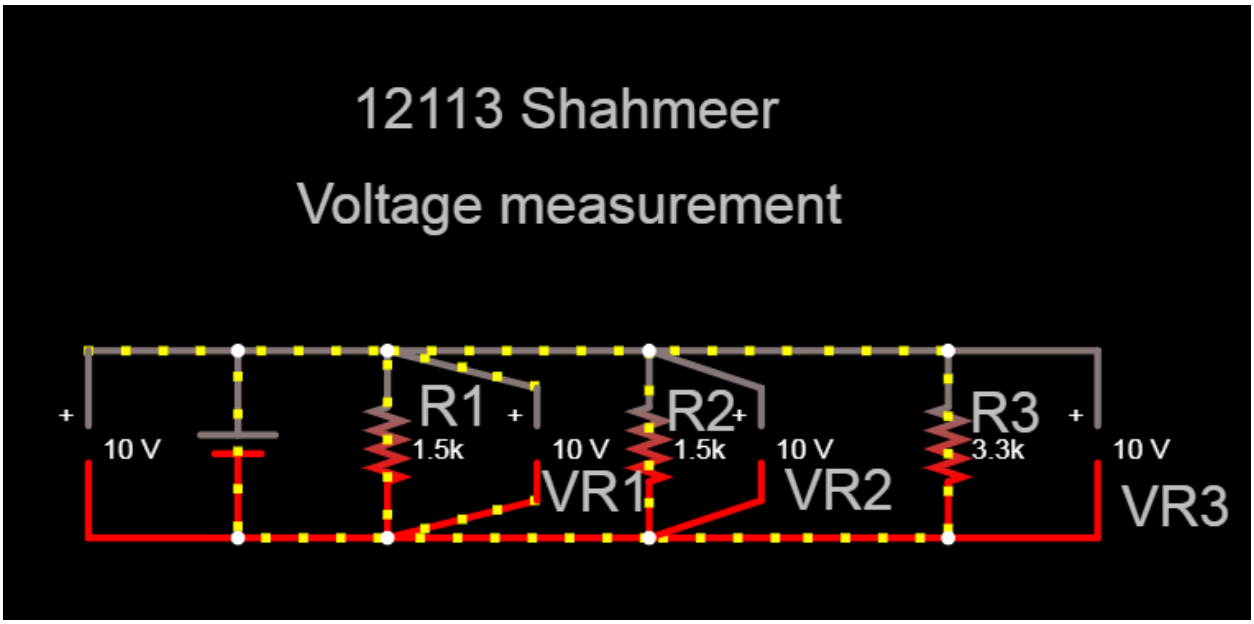
Objective C:

Measure the voltage Drop across each individual resistor using Digital Multi-meter.

V_{R1} = 10 VDC.

V_{R2} = 10 VDC.

V_{R3} = 10 VDC.



- Return the voltage to zero.
- Calculate the total resistance R_T in circuit using ohm's law for resistance.

R_T = 611.1 Ohms.

R_T (OHM'S LAW) (Calculation);

Data:

R_T=??

V=10 VDC.

I_T=0.016364

Solution:

$V=I_T R_T$.

$R_T=V/ I_T$.

$R_T = 10/0.016364$.

$R_T = 611.109$ Ohms.

- List the total parallel resistance R_T of resistors R1, R2 and R3 as calculated above.

$R_{T\ (CALCULATED)} = 601.11$ Ohms.

$R_{T\ (OHMMETER)} = 601.1$ Ohms.

$R_{T\ (OHM'S\ LAW)} = 601.109$ Ohms.

- Are the three resistance values approximately the same?

Answer: Yes.

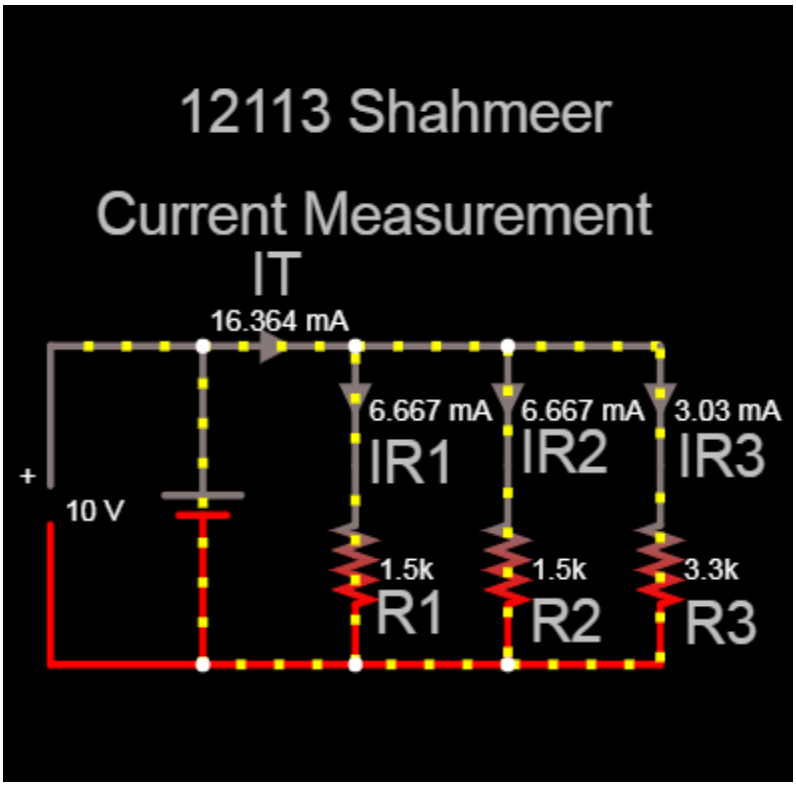
Objective D:

Measure the current flow through each individual resistor using the Digital multi-meter.

I_T = 6.667 mA DC.

I_T = 6.667 mA DC.

I_T = 3.03 mA DC.



Link:

https://tinyurl.com/yydbpu3h