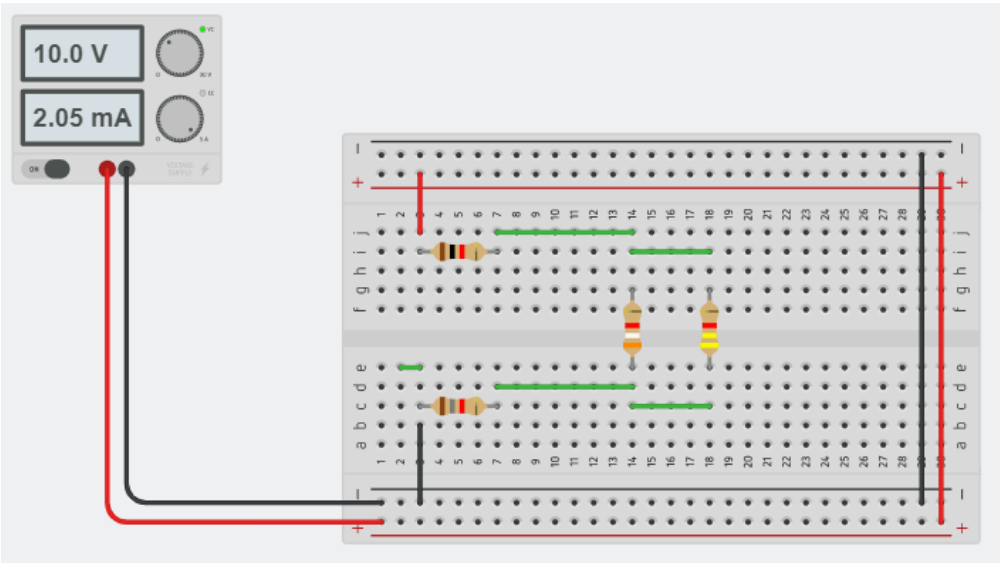


Tabla 1.1. Resultados obtenidos de voltaje y corriente, en cada elemento del circuito.

Variable	Valor calculado	Valor medido	Error porcentual
V_{R1} (V)	2.05	2.05	0.01 %
I_{R1} (mA)	2.05	2.05	0.01%
V_{R2} (V)	4.24	4.25	0.01%
I_{R2} (mA)	1.09	0.965	11.46%
V_{R3} (V)	2.12	2.12	0.01%
I_{R3} (mA)	0.964	0.965	0.01%
V_{R4} (V)	2.12	2.12	0.01%
I_{R4} (mA)	0.964	0.965	0.10%
V_{R5} (V)	3.69	3.70	0.27%
I_{R5} (mA)	2.05	2.05	0.01%

CÁLCULOS

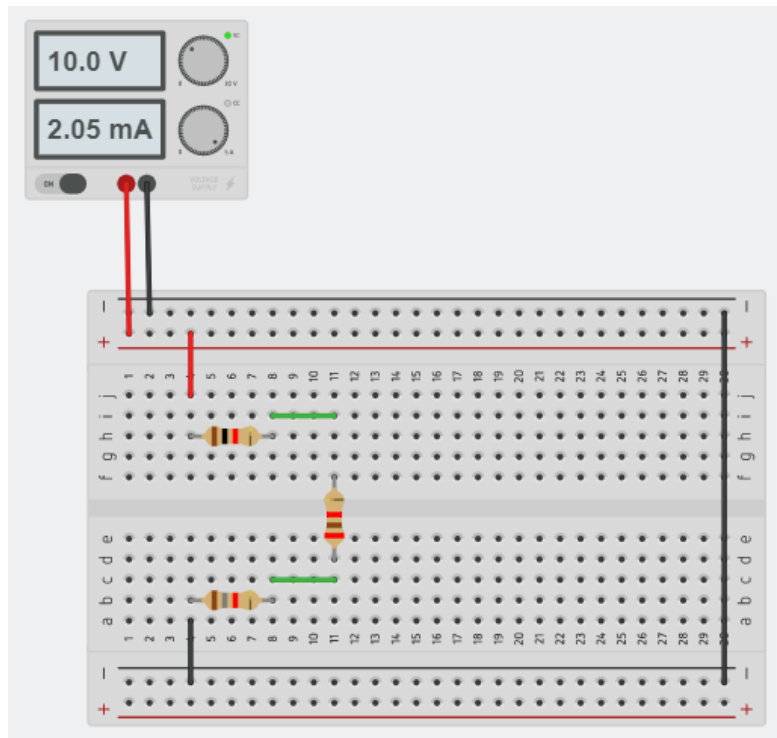


$$R_{eq1} = R_3 + R_4$$

$$R_{eq1} = 2200 + 2200$$

$$R_{eq1} = 4400 \, \Omega$$

$$R_{eq1} = 4.4 \, m\Omega$$



$$\frac{1}{R_{eq2}} = \frac{1}{R_2} + \frac{1}{R_{eq1}}$$

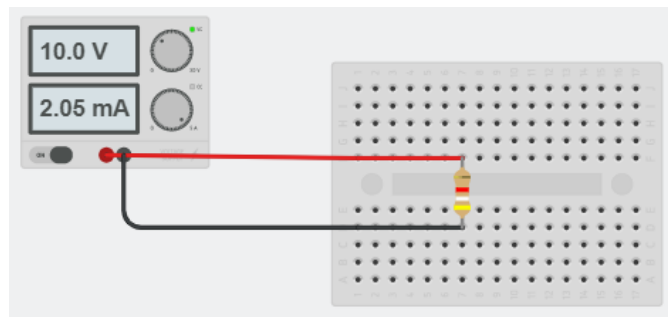
$$\frac{1}{R_{eq2}} = \frac{1}{3900} + \frac{1}{4400}$$

$$\frac{1}{R_{eq2}} = \frac{83}{171600}$$

$$R_{eq2} = \frac{171600}{83}$$

$$R_{eq2} = 2067.47 \, \Omega$$

$$R_{eq2} = 2.067 \, m\Omega$$



$$R_{eq3} = R_1 + R_{eq2} + R_5$$

$$R_{eq3} = 1000 + 2.067 + 1800$$

$$R_{eq3} = 4867.47 \, \Omega$$

$$R_{eq3} = 4.867 \, m\Omega$$

$$I_T = \frac{V}{R_{eq3}}$$

$$I_T = \frac{10}{4867.47}$$

$$I_T = 2.05 \times 10^{-3} \, A$$

$$I_T = 2.05 \, mA$$

Para resistencia 1

$$V_{R1} = I_T \times R_1$$

$$V_{R1} = 2.05 \times 10^{-3} \times 1000$$

$$V_{R1} = 2.05 \, V$$

$$I_{R1} = \frac{V_{R1}}{R_1}$$

$$I_{R1} = \frac{2.05}{1000}$$

$$I_{R1} = 2.05 \times 10^{-3} \, A$$

$$I_{R1} = 2.05 \, mA$$

Para resistencia 2

$$V_{Req2} = R_{eq2} \times I_T$$

$$V_{Req2} = 2067.47 \times 2.05 \times 10^{-3}$$

$$V_{Req2} = 4.2383 \, V \approx 4.24 \, V$$

$$I_{Req2} = \frac{V_{Req2}}{R_{eq2}}$$

$$I_{Req2} = \frac{4.24}{2067.47}$$

$$I_{Req2} = 2.05 \times 10^{-3} \, A$$

$$I_{Req2} = 2.05 \, mA$$

$$V_{R2} = 4.24 \text{ V}$$

$$I_{R2} = \frac{V_{R2}}{R_2}$$

$$I_2 = \frac{4.24}{3900}$$

$$I_{R2} = 1.0871 \times 10^{-3} \text{ A} \approx 1.09 \text{ mA}$$

Para resistencia 3

$$I_{Req1} = \frac{V_{Req1}}{R_{eq1}}$$

$$I_{Req1} = \frac{4.24}{4400}$$

$$I_{Req1} = 9.64 \times 10^{-4} \text{ A} = 964 \times 10^{-6} \text{ A}$$

$$I_{Req1} = 964 \text{ } \mu\text{A}$$

$$I_{Req1} = 0.964 \text{ mA}$$

$$I_{R3} = 0.964 \text{ mA}$$

$$V_{R3} = I_{R3} \times R_3$$

$$V_{R3} = 0.964 \times 10^{-3} \times 2200$$

$$V_{R3} = 2.12 \text{ V}$$

Para resistencia 4

$$I_{R3} = I_{R4} = 0.964 \text{ mA}$$

$$V_{R3} = I_{R4} \times R_4$$

$$V_{R4} = 0.964 \times 10^{-3} \times 2200$$

$$V_{R4} = 2.12 \text{ V}$$

Para resistencia 5

$$V_{R5} = I_T \times R_5$$

$$V_{R3} = 2.05 \times 10^{-3} \times 1800$$

$$V_{R3} = 3.69 \text{ V}$$

$$I_{R5} = \frac{V_{R5}}{R_5}$$

$$I_{R5} = \frac{3.69}{1800}$$

$$I_{R5} = 2.05 \times 10^{-3} A$$

$$I_{R5} = 2.05 mA$$

Tabla 1.2 Verificación de la tabla LVK

VOLTAJE	TRAYECTORIA 1		TRAYECTORIA 2		TRAYECTORIA 3		Error porcentual
	Calculado	Medido	Calculado	Medido	Calculado	Medido	
$V_T (V)$	10	10	0	0	0	0	-
$V_{R1} (V)$	2.05	2.05	0	0	2.05	2.05	0.01%
$V_{R2} (V)$	4.25	4.25	4.25	4.25	0	0	0.01%
$V_{R3} (V)$	0	0	2.12	2.12	2.12	2.12	0.01%
$V_{R4} (V)$	0	0	2.12	2.12	2.12	2.12	0.01%
$V_{R5} (V)$	3.69	3.70	0	0	3.69	3.70	0.27%
$\sum V$	19.99	20	8.49	8.49	9.98	9.98	-

CÁLCULOS

Trayectoria 1

$$6.7 I_1 - 3.9 I_2 = 10$$

Trayectoria 2

$$-3.9 I_1 + 8.3 I_2 = 0$$

$$-26.13 I_1 + 15.21 I_2 = -39$$

$$26.13 I_1 - 55.61 I_2 = 0$$

$$-40.4 I_2 = -39$$

$$I_2 = 0.964 mA$$

$$I_1 = \frac{8.3 I_2}{3.9}$$

$$I_1 = \frac{8.3 \times 0.96}{3.9}$$

$$I_1 = \frac{8.3 \times 0.96}{3.9}$$

$$I_1 = 2.043 mA$$

$$V = IR$$

$$V_{R1} = I_1 R_1$$

$$V_{R1} = 2.05 \times 10^{-3} \times 1000$$

$$V_{R1} = 2.05 \text{ V}$$

$$V_{R5} = I_5 R_5$$

$$V_{R5} = 2.05 \times 10^{-3} \times 1800$$

$$V_{R5} = 3.69 \text{ V}$$

$$V_{R3} = I_3 R_3$$

$$V_{R3} = 0.964 \times 10^{-3} \times 2200$$

$$V_{R3} = 2.12 \text{ V}$$

$$V_{R3} = V_{R4} = 2.12 \text{ V}$$

$$V_{R2} = (I_1 - I_2) \times 3.9$$

$$V_{R2} = 1.09 \times 3.9$$

$$V_{R2} = 4.25 \text{ V}$$

Tabla 1.3 Verificación de la LCK

AMPERAJ E	NODO 1			NODO 2		
	Calculad o	Medid o	Error porcentual	Calcula do	Medid o	Error porcentual
I_T (V)	2.05	2.05	0.01%	0.964	0.965	0.10%
I_{R1} (V)	2.05	2.05	0.01%	0	0	-
I_{R2} (V)	1.09	0.965	11.46%	1.09	0.965	11.46%
I_{R3} (V)	0	0	-	0.964	0.965	0.10%
I_{R4} (V)	0	0	-	0.964	0.965	0.10%
I_{R5} (V)	2.05	2.05	0.01%	0	0	-
ΣI	7.24	7.115	-	3.98	3.86	-

$$I = \frac{V}{R}$$

$$I_{R1} = \frac{2.05}{1000} = 2.05 \text{ mA}$$

$$I_{R2} = \frac{4.25}{3900} = 1.09 \text{ mA}$$

$$I_{R3} = \frac{2.12}{2200} = 0.964 \text{ mA}$$

$$I_{R3} = I_{R4} = 0.964 \text{ mA}$$

$$I_{R5} = \frac{3.69}{1800} = 2.05 \text{ mA}$$

Formulas a considerar:

$$\text{error \%} = \frac{\text{Valor teórico} - \text{Valor medido}}{\text{Valor teórico}} \times 100$$