

Quiz 2 Solution

Electrical Circuits 1

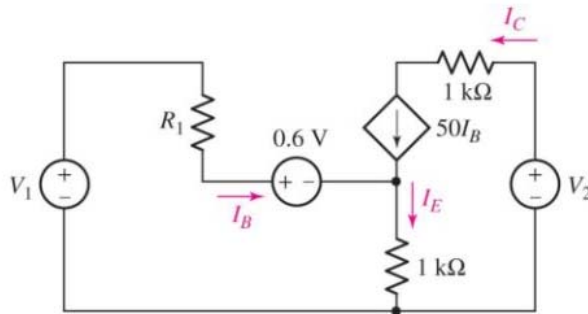
TE1002

Tecnológico de Monterrey

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Name _____

In the given circuit, calculate the voltage across the dependent source ("+" reference on top) if V_2 is 15 V, and I_B is 20 μ A.



The voltage across the dependent source is $12.98 \pm 2\%$ V.

Explanation:

The voltage across the dependent source can be calculated as follows:

$$V_{dep} = V_2 - 1000I_C - 1000I_E$$

$$\text{where } I_E = I_B + I_C$$

$$V_2 = 15 \text{ V}$$

$$I_C = 50I_B = 50 (20 \times 10^{-6}) = 0.001 \text{ A}$$

$$V_{dep} = 15 - 1000 (0.001) - 1000 (20 \times 10^{-6} + 0.001) = 12.98 \text{ V}$$

The voltage across the dependent source is 12.98 V.

The voltage across the dependent source is