

Name (print): * SOLUTIONS *

Program: _____

Carefully circle the correct answer; all questions are equally weighted, no partial credit:

1. What voltage is developed across a 330 ohm resistor if 10 mA of current flows through it?

a. 0.3 V
 b. 3.3 V
 c. 33 V
 d. 3300 V

$$\frac{V}{I/R} \quad V = (10 \text{ mA})(330 \Omega) = \underline{\underline{3.3 \text{ V}}}$$

2. 5 mA of current flow through a 10 k-Ohm resistor. How much power is dissipated?

a. 250 mW
 b. 5 μ W
 c. 500 mW
 d. 25 μ W

$$P = I^2 \cdot R = (5 \text{ mA})^2 (10 \text{ k}\Omega) = \underline{\underline{250 \text{ mW}}}$$

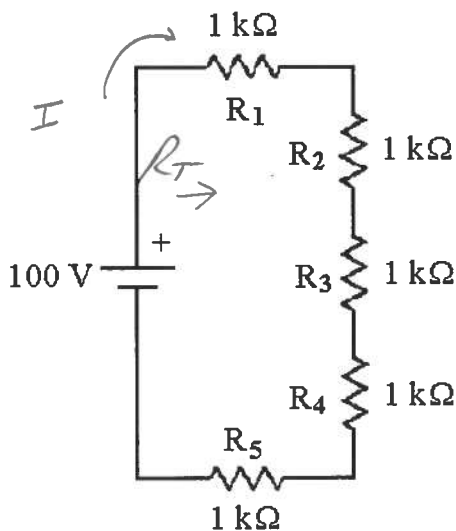


Figure 5.2

$$R_T = R_1 + R_2 + R_3 + R_4 + R_5 = \underline{\underline{5 \text{ k}\Omega}}$$

$$I = \frac{E}{R} = \frac{100 \text{ V}}{R_T} = \frac{100 \text{ V}}{5 \text{ k}\Omega} = \underline{\underline{20 \text{ mA}}}$$

3. See Figure 5.2. How much power is dissipated by R_1 ? **Hint:** Find the equivalent resistance seen by the power supply first.

a. 200 mW
 b. 400 mW
 c. 1 W
 d. 2 W

$$P_{R_1} = I^2 \cdot R_1 = (20 \text{ mA})^2 (1 \text{ k}\Omega) = \underline{\underline{400 \text{ mW}}}$$

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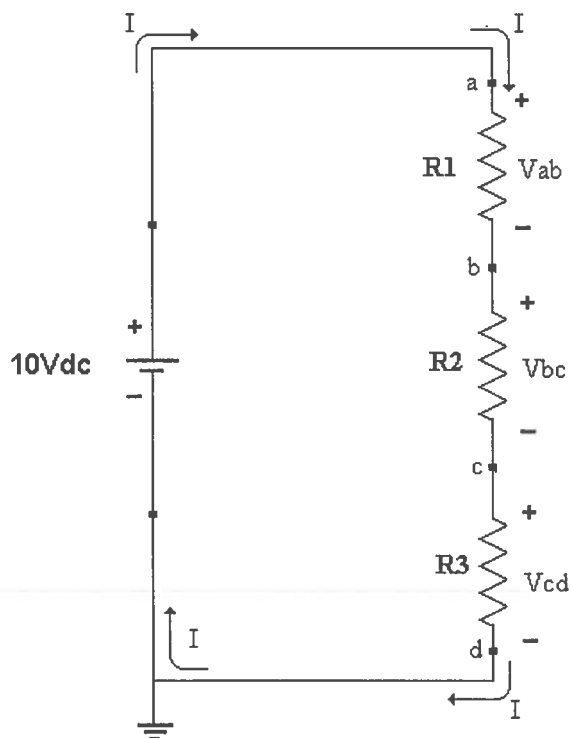


fig. 1

In the circuit shown above, $R1 = R2 = 1\text{k-Ohms}$ and $R3 = 3.3\text{k-Ohms}$

4. Calculate I

- a. 2.83 mA
- b. 3.43 mA
- c. 5.24 mA
- d. 1.89 mA

$$I = \frac{10V}{R_T} = \frac{10V}{5.3k\Omega} = \underline{\underline{1.89\text{ mA}}}$$

5. Calculate V_{bc}

- a. 3.43 V
- b. 5.24 V
- c. 1.89 V
- d. 2.83 V

$$V_{bc} = I \cdot R_2 = (1.89\text{ mA})(1k\Omega) = \underline{\underline{1.89V}}$$