

TEAM NAME (printed): * SOLUTIONS *

Team members PRESENT (printed names): _____

- All 5 questions are equally weighted
- Show your work for partial credit
- Box-in your final answer for each problem

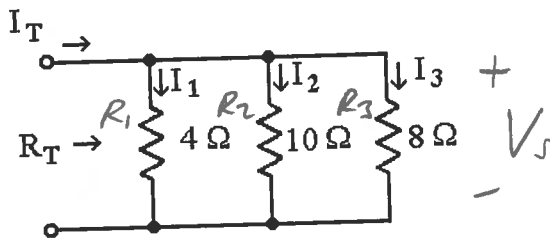


Figure 6.1

1. See Figure 6.1. Find the total resistance R_T

$$R_T = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}} = \frac{1}{\frac{1}{4\ \Omega} + \frac{1}{10\ \Omega} + \frac{1}{8\ \Omega}}$$

$$\boxed{R_T = 2.11\ \Omega}$$

2. See Figure 6.1. If $I_T = 10\text{A}$, find I_3

$$I_3 = I_T \left(\frac{R_T}{R_3} \right) = 10\text{A} \left(\frac{2.11\ \Omega}{8\ \Omega} \right)$$

$$= \boxed{2.63\text{A}}$$

3. See Figure 6.1. What is the voltage across the resistors if $I_T = 6\text{A}$?

$$V_s = I_T \cdot R_T = (6\text{A})(2.11\ \Omega) = \boxed{12.7\text{V}}$$

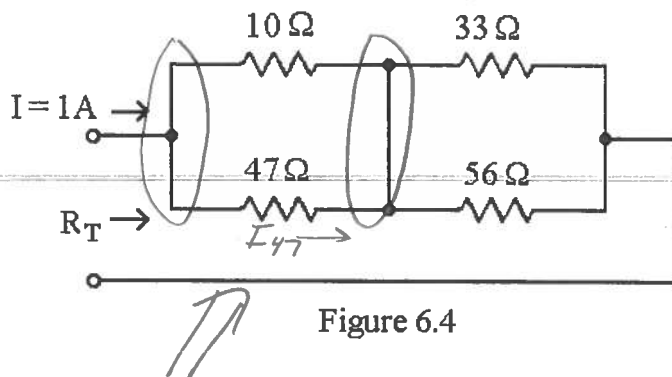


Figure 6.4

4. See Figure 6.4. Which two resistors are in parallel?

a. 10 ohm and 47 ohm

b. 10 ohm and 33 ohm ✗

c. 10 ohm and 56 ohm ✗

d. None are in parallel ✗

$$10 \parallel 47 = (8.25 \Omega)$$

5. See Figure 6.4. What is the current through the 47 ohm resistor?

$$I_{47} = I \left(\frac{10 \Omega \parallel 47 \Omega}{47 \Omega} \right) = 1 \text{ A} \left[\frac{8.25 \Omega}{47 \Omega} \right]$$

$$I_{47} = 175 \text{ mA}$$