DC Circuits (EEET 111 ~~02~~)

TEAM Quiz 2181 — Series and Voltage Sources

TEAM NAME (printed): * SOLUTIONS *

Team members **PRESENT** (printed names): _____

_____

_____

_____

MULTIPLE CHOICE: Circle the one alternative that best completes the statement or answers the question. No partial credit will be awarded

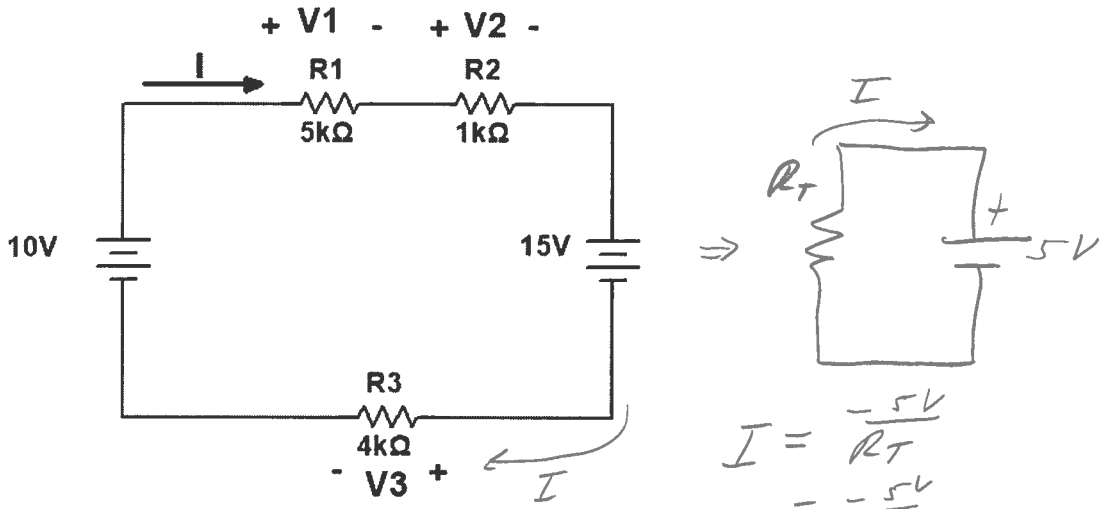


Figure 1

1)See Figure 1. Which one of the following KVL equations describes this circuit?

A) +10 V - V1 - V2 - 15 V - V3 = 0

B) +10 V - V1 - V2 + 15 V - V3 = 0

C) -10 V - V1 - V2 - 15 V - V3 = 0

D) +10 V + V1 + V2 - 15 V + V3 = 0

2) See Figure 1. The total current **I** is:

A) -500 µA

B) +2.5 mA

C) +500 µA

D) -2.5 mA

3) See Figure 1. Voltage **V3** is:

A) 10 V

B) -10 V

C) 5.0 V

D) -2.0V

$V_3 = I \cdot R_3$
$= (-500\mu A)(4k\Omega)$
$= -2V$

Questions 4,5
→

DC Circuits (EEET 111 03)

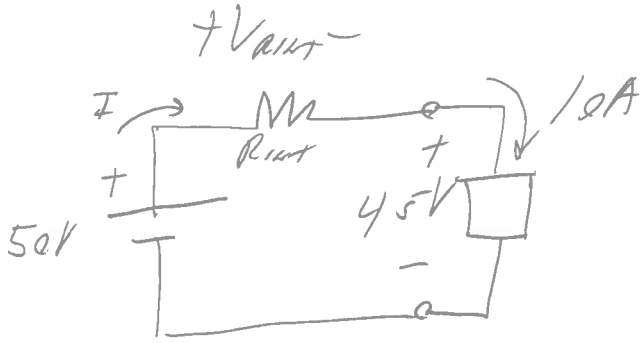
TEAM Quiz 2181 — Series and Voltage Sources

Answer the following questions. Show your work and box-in your final answer. Partial credit may be awarded.

4) A series circuit with a voltage source of 15 volts and a total resistance of 7500 ohms will dissipate how much power?

$$P_{R_T} = \frac{V_{R_T}^2}{R_T} = \frac{(15V)^2}{7500\Omega} = \boxed{30mW}$$

5) Calculate the internal resistance of a DC power supply if the no-load output voltage is V_{NL} = 50 V, and the output voltage is 45 V with a 10 A load is connected.



$V_{R_{INT}} = 5V$

$I = 10A$

$\therefore R_{INT} = \frac{V_{R_{INT}}}{I} = \frac{5V}{10A} = \boxed{0.5\Omega}$