Quiz 02 - Series Parallel Circuits, Batteries

Due Dec 14 at 11:59pm   **Points** 155   **Questions** 30

Available Aug 24 at 12pm - Dec 14 at 11:59pm 4 months   **Time Limit** None

Allowed Attempts 2

Instructions

Covers lab and lecture topics from classes 6 through 9

Do not include include units of measure in your calculated numeric answers

Attempt History

	Attempt	Time	Score
KEPT	**Attempt 2**	7 minutes	150 out of 155
LATEST	**Attempt 2**	7 minutes	150 out of 155
	Attempt 1	53 minutes	145 out of 155

Score for this attempt: **150** out of 155

Submitted Oct 8 at 8:56pm

This attempt took 7 minutes.

Question 1   0 / 5 pts

Select two answers that apply

Series circuits are characterized by;

You Answered   ☑ a single applied voltage

Correct!   ☑ equal current in all parts of the circuit

orrect Answer   ☐ a single current path

☐ multiple current paths

Question 2   5 / 5 pts

In a series circuit, total resistance is equal to

○ the double inverse of the series resistance sum

Correct!

◉ the sum of all series connected resistance

○ the RMS resistance value

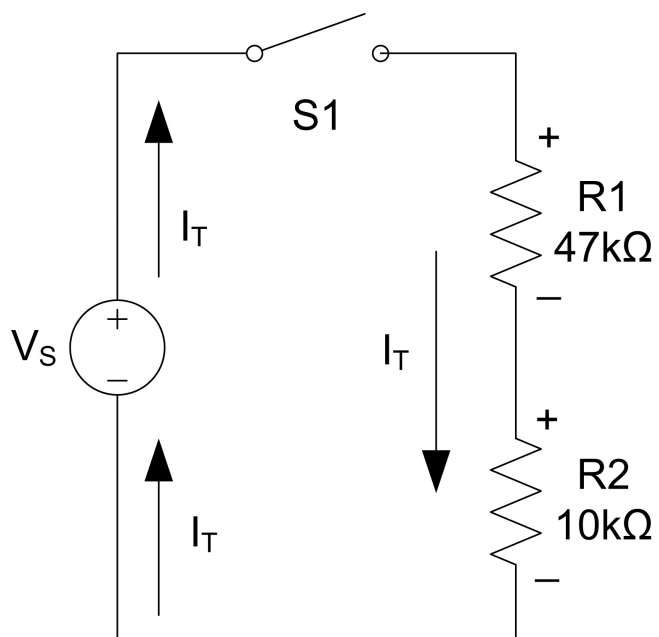○ the product over sum of the series resistance

Question 3   5 / 5 pts

In a parallel circuit, total resistance is equal to

○ the product over the quotient of the resistances

○ the square root of the series resistance

○ the RMS resistance value

Correct!

◉ the inverse of the conductance sum

Question 4   5 / 5 pts

Find the total resistance for this circuit.

S1

R1
47kΩ

I_T

V_S

I_T

I_T

I_T

+

−

+

R2
10kΩ

−

Correct!

57,000

orrect Answers   57,000 (with margin: 1,140)

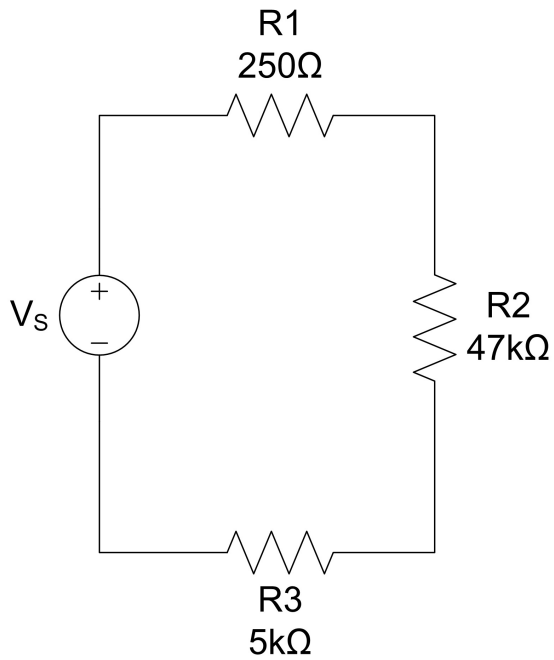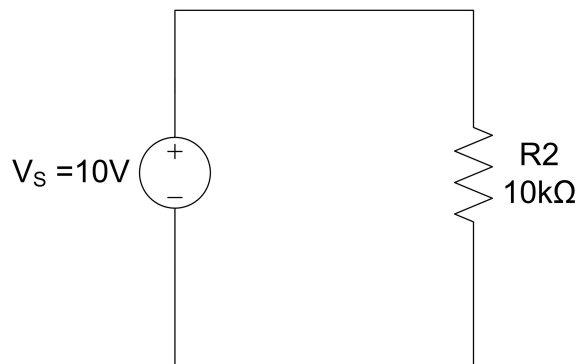## Question 5   **5 / 5 pts**

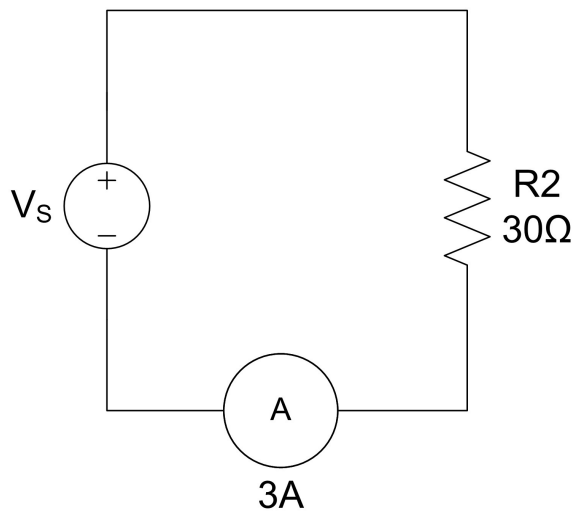Find the total resistance for this circuit.

Correct!

52,250

orrect Answers   52,250 (with margin: 1,045)

Question 6   5 / 5 pts

Find the total circuit current. Enter your answer in milliamps. Do not include units in your answer.
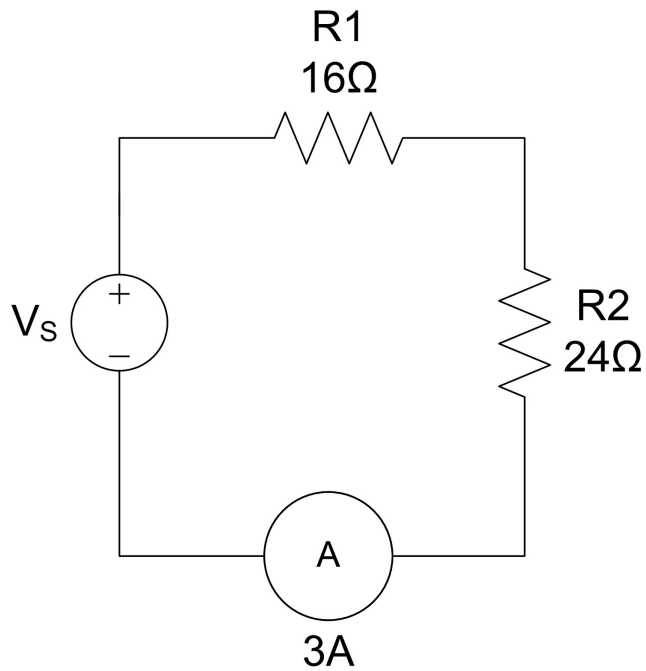
Correct!

1

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orrect Answers   1 (with margin: 0.02)

Question 7   **5 / 5 pts**

Find the circuit source voltage V_S

Correct!

90

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orrect Answers   90 (with margin: 1.8)

Question 8   **5 / 5 pts**

Find the circuit source voltage V_S

Correct!

120

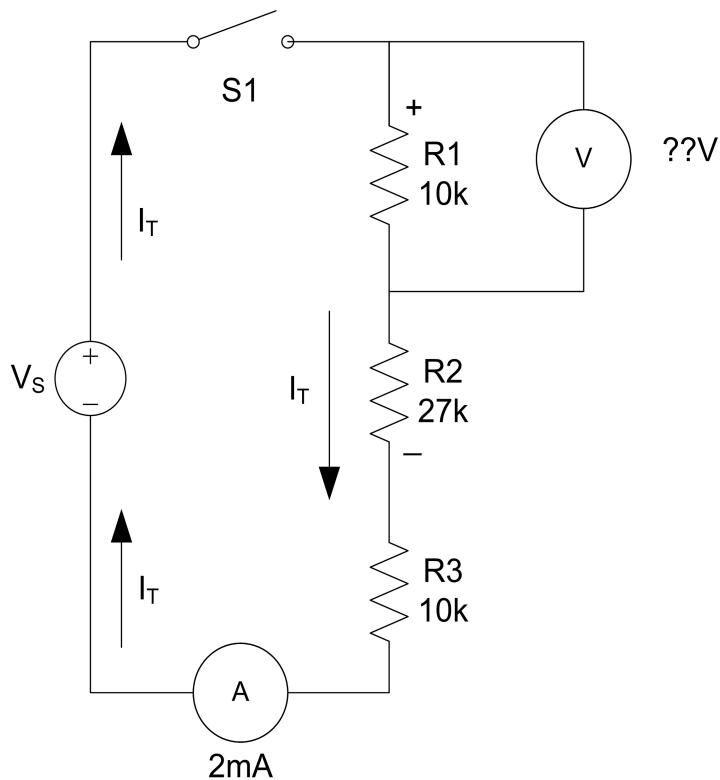**orrect Answers**   120 (with margin: 2.4)

Question 9   5 / 5 pts

Total series resistance is directly proportional to

Correct!

◉ source voltage

○ parallel resistance

○ total current

○ capacitive reactance

Question 10   5 / 5 pts

Find the voltage drop across R1

Question 08
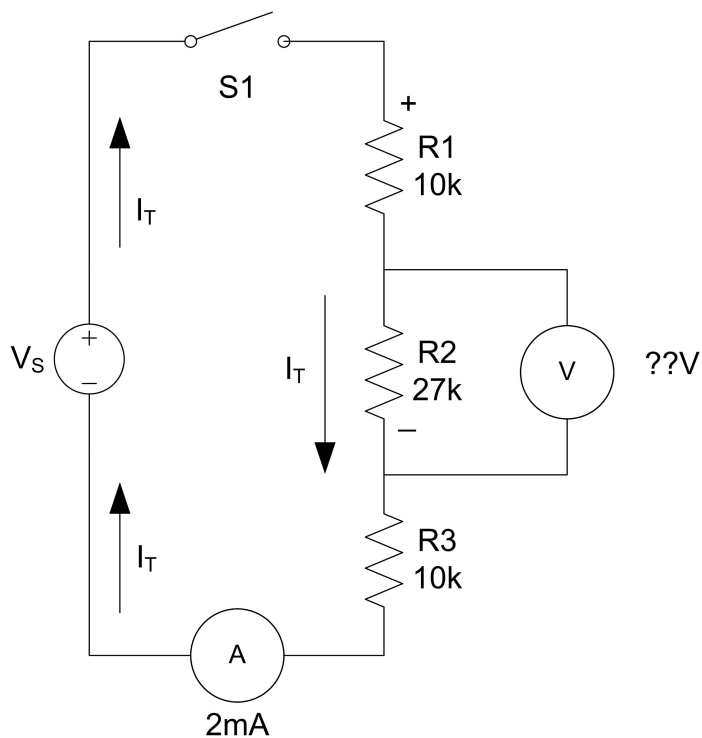
Correct!

20

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orrect Answers   20 (with margin: 1)

Question 11   **5 / 5 pts**

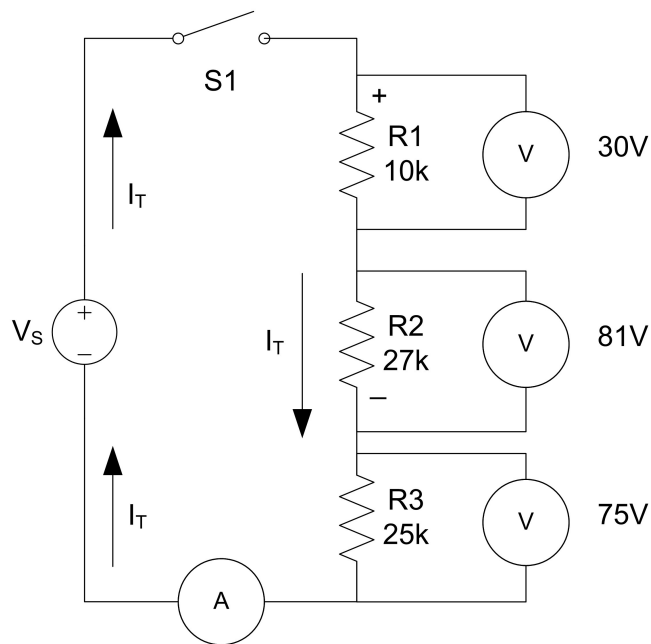Find the voltage drop across R2

Correct!

54

orrect Answers   54 (with margin: 1.08)

Question 12   **5 / 5 pts**

Find source voltage V_S

Correct!

186

orrect Answers 186 (with margin: 3.72)
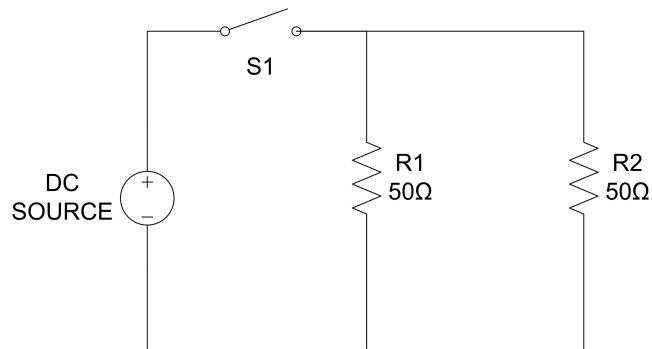
Question 13 5 / 5 pts

Select two answers that apply

Parallel circuits are characterized by;

Correct!

☑ equal voltage across parallel components

☐ different component voltage drops

☐ equal current in all parts of the circuit

Correct!

☑ current paths are inversely proportional to resistance

Question 14

5 / 5 pts

Find the total circuit resistance

Correct!
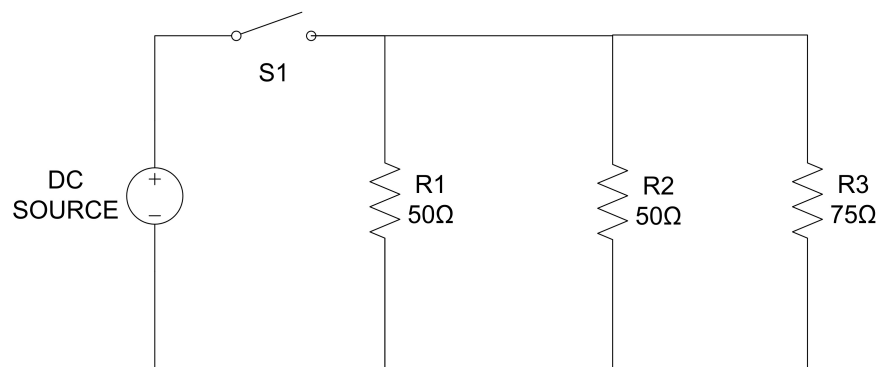
25

orrect Answers   25 (with margin: 1.25)

Question 15

5 / 5 pts

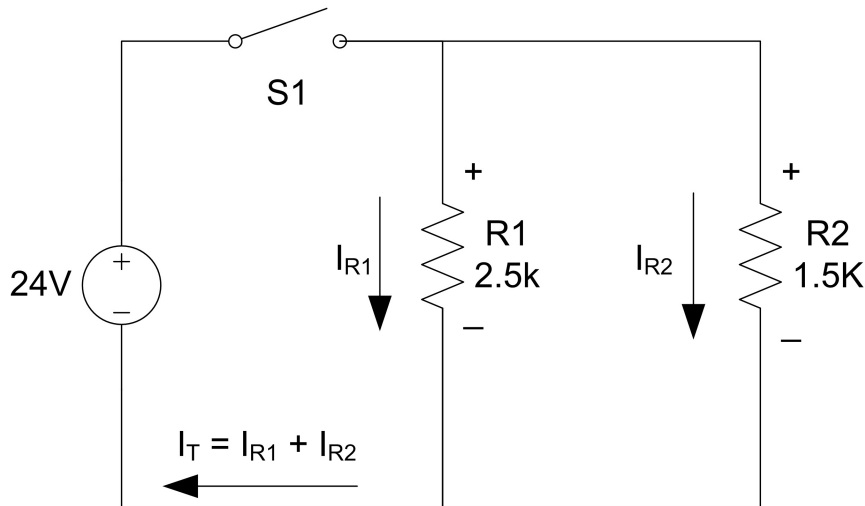Find the total circuit resistance

Question 15

Correct!

18.75

orrect Answers   18.75 (with margin: 0.375)

Question 16   5 / 5 pts

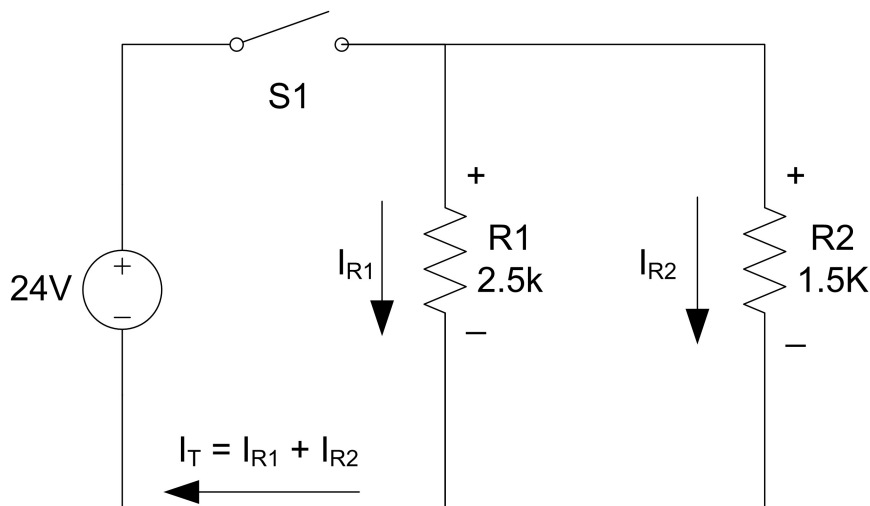Use Ohm's law to find branch current I_{R1}. Give your answer in milliamps.

Correct!

> 9.6

orrect Answers   9.6 (with margin: 0.196)

Question 17   5 / 5 pts

Use Ohm's law to find branch current I_{R2}. Give your answer in milliamps.
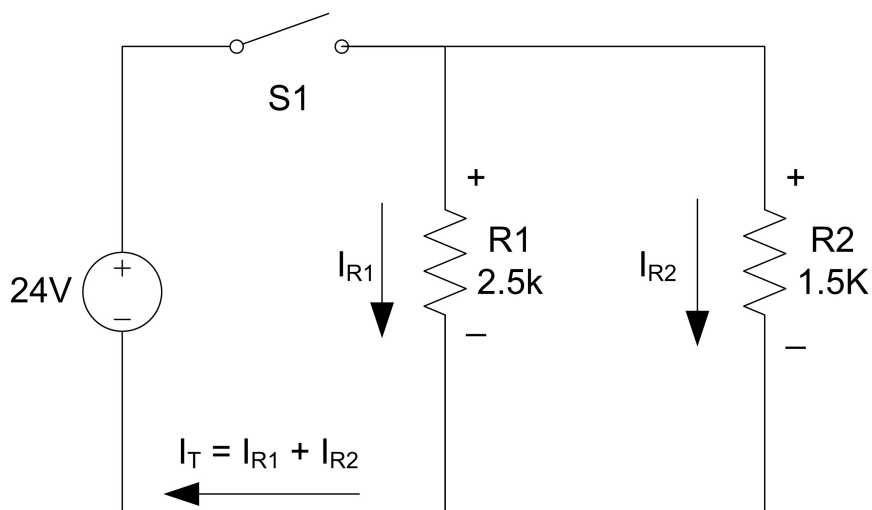
Correct!

16

orrect Answers   16 (with margin: 0.32)

Question 18   **5 / 5 pts**

Find the total circuit current I_T. Give your answer in milliamps.
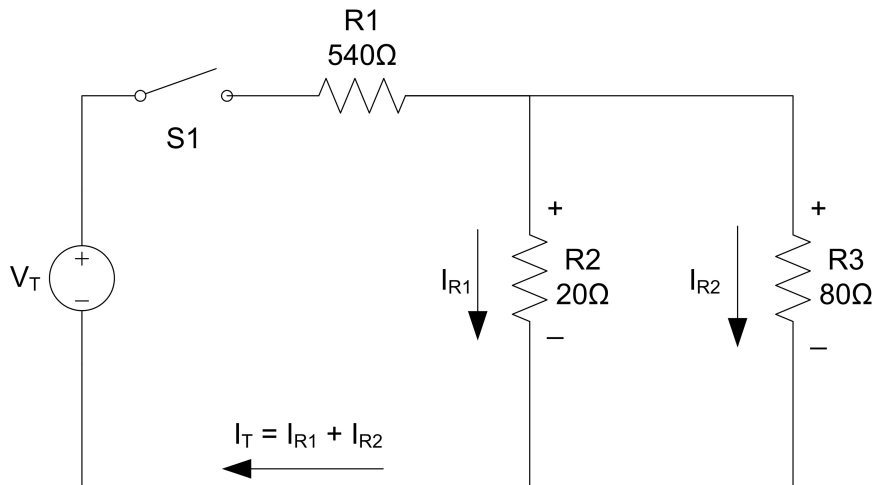

Correct!

25.6

orrect Answers   25.6 (with margin: 0.512)

Question 19   **5 / 5 pts**

Find the total resistance for this circuit. Give your answer in Ohms.

Correct!

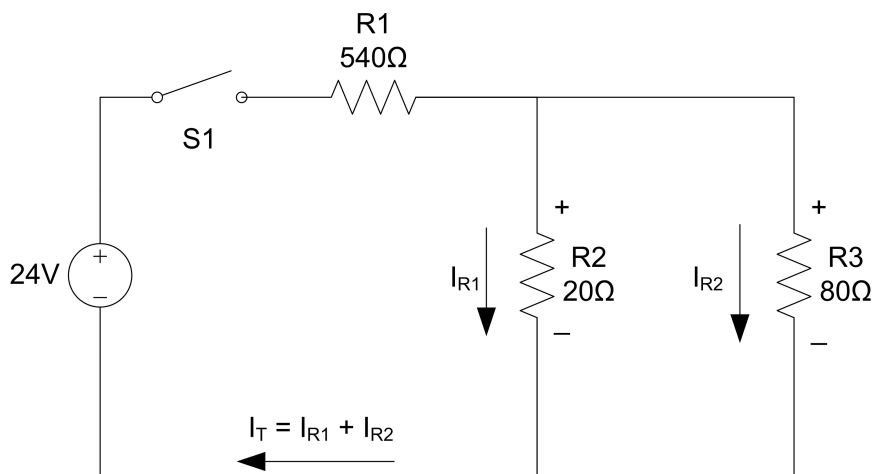556

orrect Answers   556 (with margin: 11.12)

Question 20   **5 / 5 pts**

Find the total current for this circuit using Ohm's Law. Give your answer in milliamps.

Correct!

43.165

orrect Answers   43.16 (with margin: 0.863)

Question 21

5 / 5 pts

Identify two characteristics of a combination series-parallel circuit (check two boxes)

☐   series components are inversely proportional to resistance

Correct!

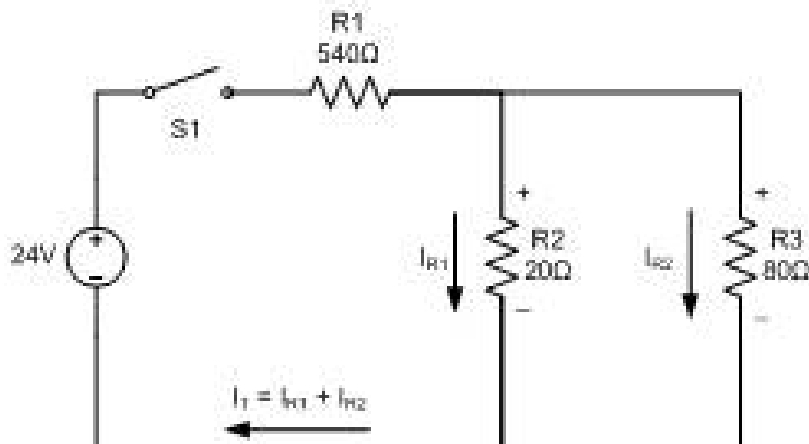☑ Parallel components may be in parallel with individual or combinations of components

☐   parallel component resistance is additive

Correct!

☑ Series components may be in series with individual or combinations of components

Question 22

5 / 5 pts

Which three circuit components share a common current path (series connected)?

Correct!

◉   The voltage source, switch 1, resistor 1

○ Resistor 1, resistor 2, resistor 3

○ Switch 1, resistor 1, resistor 3

○ Resistor 1, resistor 2

Question 23   5 / 5 pts

Which circuit components share a common voltage (parallel connected)
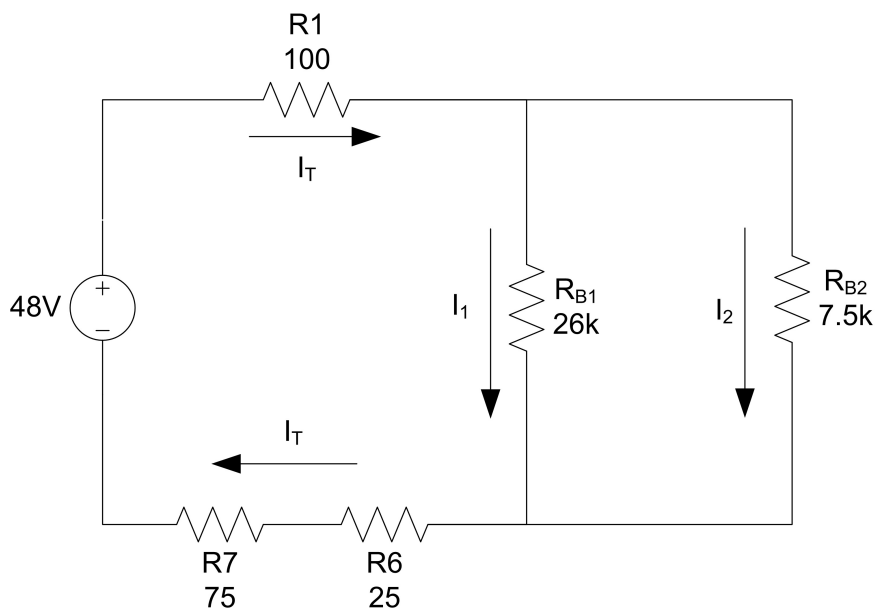
Correct!

◉ The voltage source, RB1, RB2

○ The voltage source, R1, R6, R7

○ R1, RB1, RB2

○ R1, R6, R7

Question 24   5 / 5 pts

Find the total circuit current. Give your answer in milliamps.

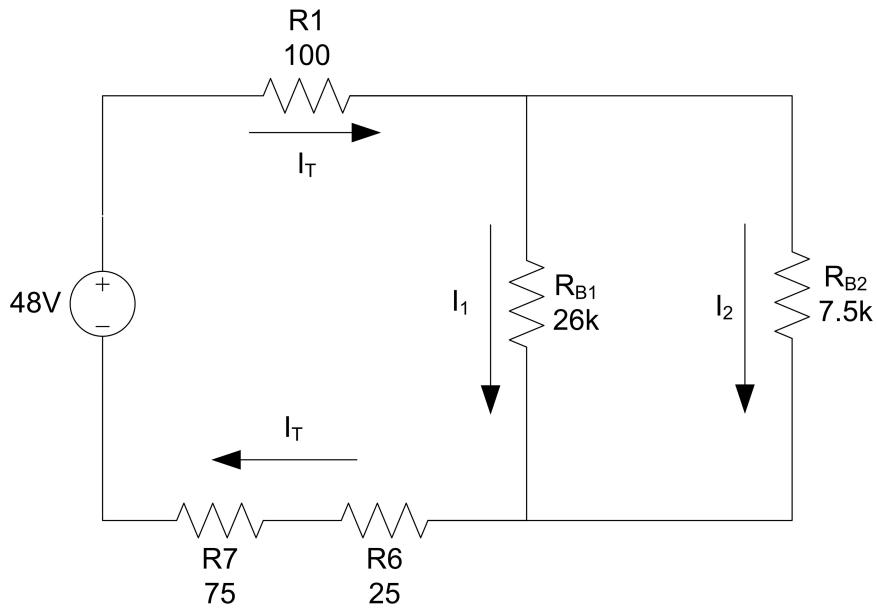R1
100

I_T

48V

I_1 R_{B1}
           26k

I_2 R_{B2}
           7.5k

I_T

R7   R6
75   25

Correct!

7.972

orrect Answers   7.97 (with margin: 0.159)

Question 25   5 / 5 pts

A battery is

○ An electron centrifugal pump that pumps charge through a circuit

○ A current separation device that divides current into multiple paths

○ The perfect energy storage device

Correct!

◉

One or more electro-chemical cells that convert chemical energy into electrical
energy

Question 26   5 / 5 pts

A primary cell is not rechargable.

Correct!

    ⦿ True

    ○ False

Question 27   10 / 10 pts

Match the battery characteristic with it's description

Correct!

Specific energy | Energy per unit mass   ▾ |

Correct!

Energy density | Energy per unit volume   ▾ |

Correct!

Capacity | The charge produced at a ⦙ ▾ |

Correct!

Energy cost | The cost per unit power   ▾ |

Question 28   5 / 5 pts

A battery's capacity rating is 500mAh @ 50mA. What is the current in mA for a 2-C discharge rate?

Give your answer in milliamps.

Correct!

> 100

orrect Answers

> 100 (with margin: 5)

Question 29

5 / 5 pts

Battery charge and discharge rates have no effect on battery capacity or performance.

○ True

Correct!

◉ False

Question 30

5 / 5 pts

Cell internal resistance is increased at high current flows.

◉ True

Correct!

○ False

Quiz Score: **150** out of 155