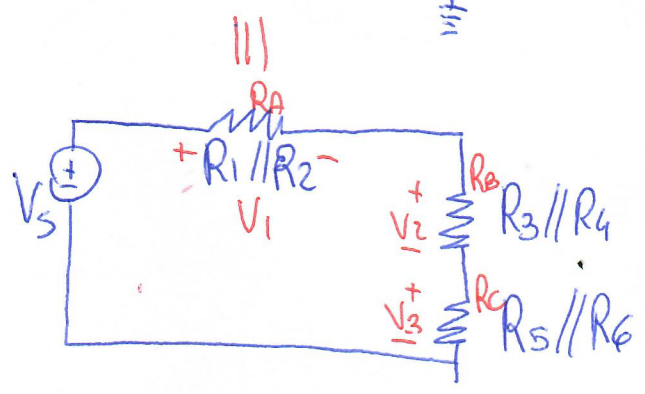


- $R_1 = 2\text{ k}$
- $R_2 = 3\text{ k}$
- $R_3 = 2\text{ k}$
- $R_4 = 6\text{ k}$
- $R_5 = 3.45\text{ k}$
- $R_6 = 6.9\text{ k}$
- $V_S = 10\text{ V}$

V_1 ?
 V_2 ?
 V_3 ?

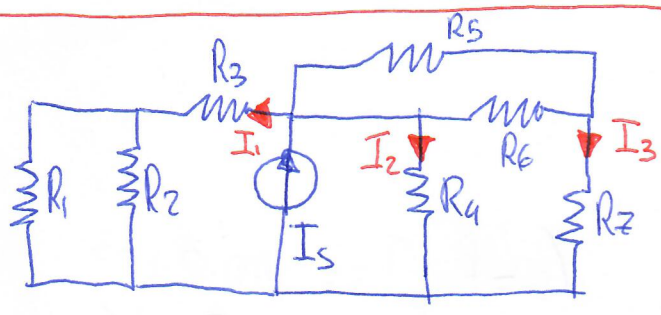


VOLTAGE DIVIDER

$$V_1 = \frac{V_S \cdot R_A}{R_A + R_B + R_C}$$

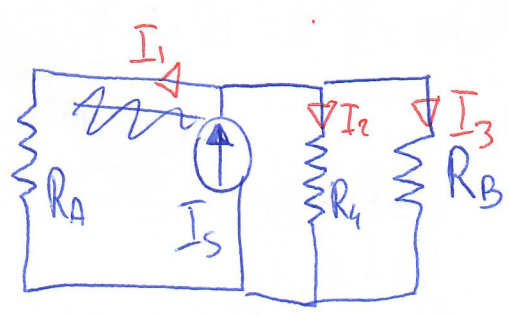
$$V_2 = \frac{V_S \cdot R_B}{R_A + R_B + R_C}$$

$$V_3 = \frac{V_S \cdot R_C}{R_A + R_B + R_C}$$



- $R_1 = 2\text{ k}$
- $R_2 = 3\text{ k}$
- $R_3 = 800$
- $R_4 = 10\text{ k}$
- $R_5 = 4\text{ k}$
- $R_6 = 6\text{ k}$
- $R_7 = 2.6\text{ k}$

I_1 ?
 I_2 ?
 I_3 ?



$$R_A = (R_1 || R_2) + R_3$$

$$R_B = R_7 + (R_5 || R_6)$$

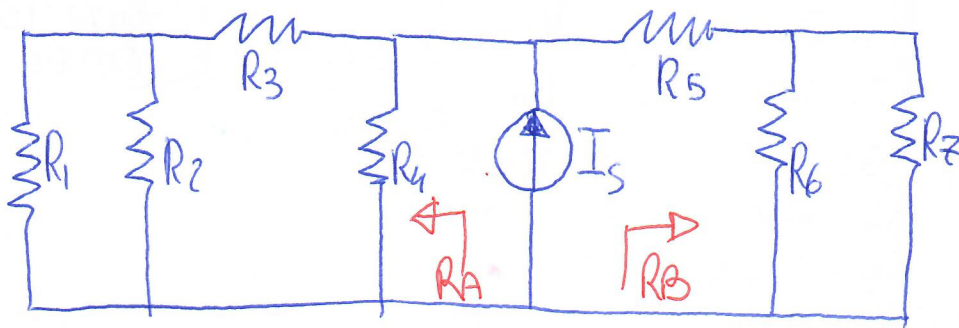
CURRENT DIVIDER

$$I_1 = I_S \cdot \frac{G_A}{G_A + G_B + G_C} = I_S \cdot \frac{1/R_A}{1/R_A + 1/R_B + 1/R_C}$$

$$I_2 = I_S \cdot \frac{G_B}{G_A + G_B + G_C}$$

$$I_3 = I_S \cdot \frac{G_C}{G_A + G_B + G_C}$$

LOOK AT HOW MANY
KCL YOU WOULD HAVE
WITH NO SIMPLIFICATION?



$$\begin{aligned} R_1 &= 20\text{ k} \\ R_2 &= 60\text{ k} \\ R_3 &= 5\text{ k} \\ R_4 &= 30\text{ k} \\ R_5 &= 21\text{ k} \\ R_6 &= 24\text{ k} \\ R_7 &= 40\text{ k} \\ I_s &= 2\text{ mA} \end{aligned}$$

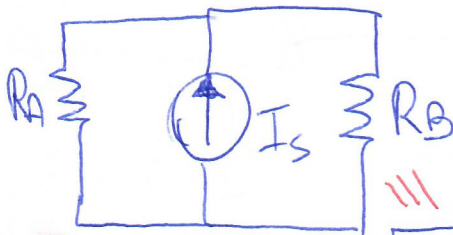
$R_{eq}?$
 $P_{ow}?$

FIND THE EQUIVALENT RESISTANCE SEEN BY THE CURRENT SOURCE, AND THE POWER GENERATED BY THE CURRENT SOURCE.

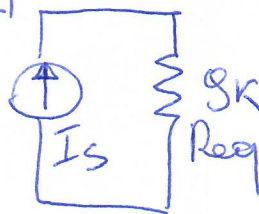
$$R_A = [(R_1 // R_2) + R_3] // R_4 \quad R_B = (R_6 // R_7) + R_5$$

15k 20k 12k 15k 25k

Slide 10
EXERCISE



$$R_{eq} = R_A // R_B = 8\text{ k}$$

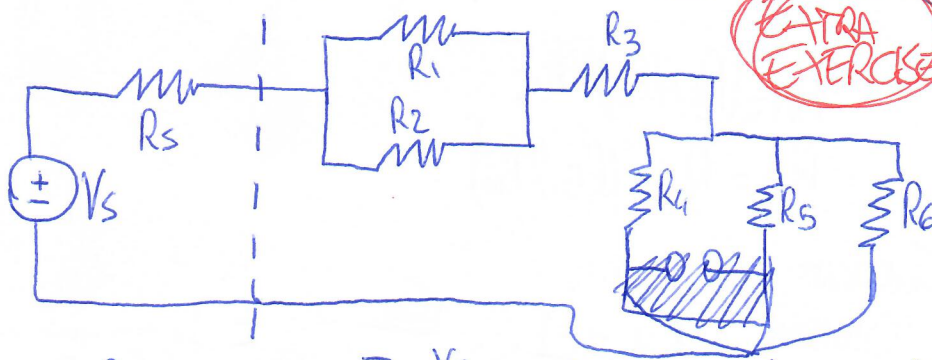


$$V_s = R_{eq} \cdot I_s = 8000 \cdot 2 \cdot 10^{-3} = 18\text{ V}$$

$$Power = V \cdot I = 18 \cdot 2 \cdot 10^{-3}$$

$$= 36\text{ mW}$$

EXTRA
EXERCISE



$$\begin{aligned} R_1 &= R_2 = 60\text{ }\Omega \\ R_3 &= 20\text{ }\Omega \\ R_4 &= R_5 = R_6 = 30\text{ }\Omega \end{aligned}$$

$$30 + 20 + 10 = 60$$

$$I = \frac{V_s}{R_s + 60} = \frac{9}{120 + 60} = \frac{9}{180} = \frac{1}{20} = 50\text{ mA}$$

$$\frac{60 \cdot V_s}{R_s + 60} = \frac{540}{120 + 60} = \frac{540}{180} = 3\text{ V}$$

$$\begin{matrix} 9\text{ V } V_s \\ 120\text{ }\Omega R_s \end{matrix}$$

- 9V 30 Ω
- 9V 60 Ω
- 9V 120 Ω
- 5V 120 Ω
- 5V 30 Ω

THE CIRCUIT IN THIS FIGURE REPRESENTS A BATTERY (VOLTAGE SOURCE WITH ITS RESISTANCE) CONNECTED TO A RESISTIVE NETWORK ON THE RIGHT HAND SIDE. YOU HAVE 5 AVAILABLE BATTERIES. SELECT THE BATTERY THAT PROVIDES A CURRENT OF 50 mA TO THE RESISTIVE NETWORK.