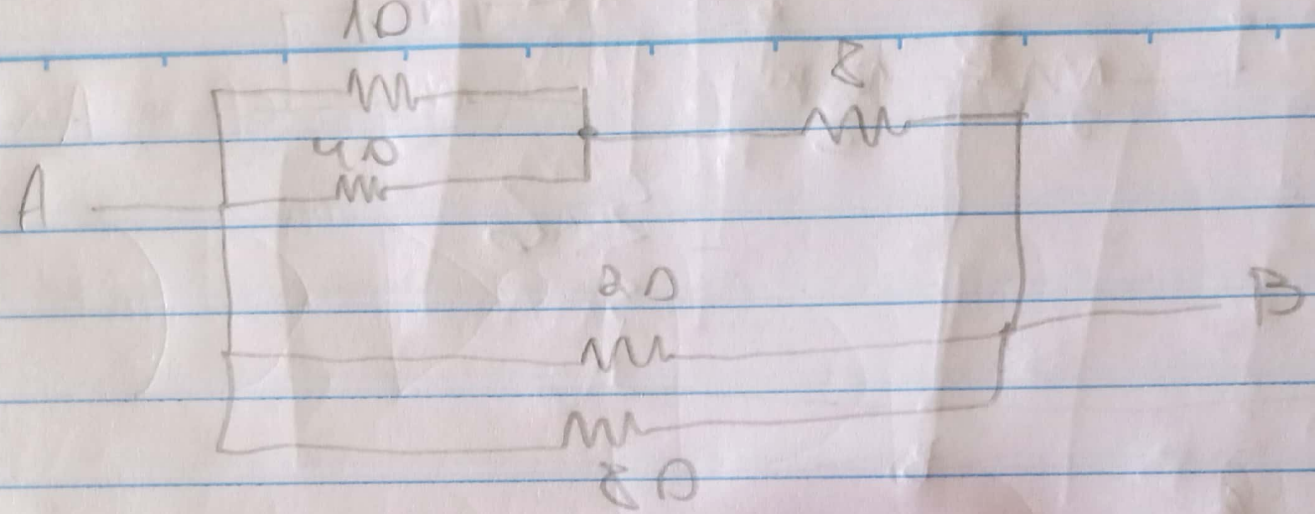
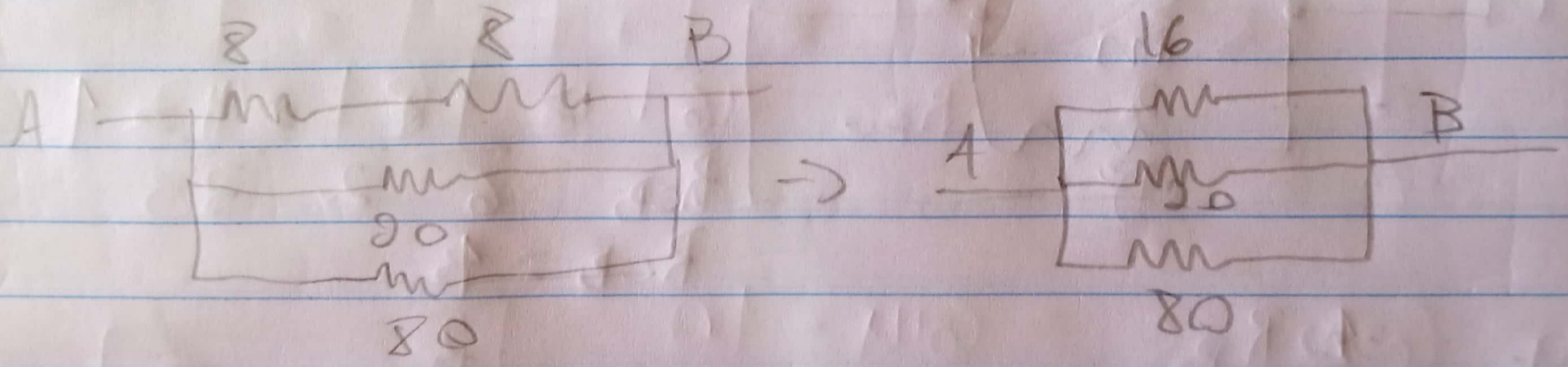
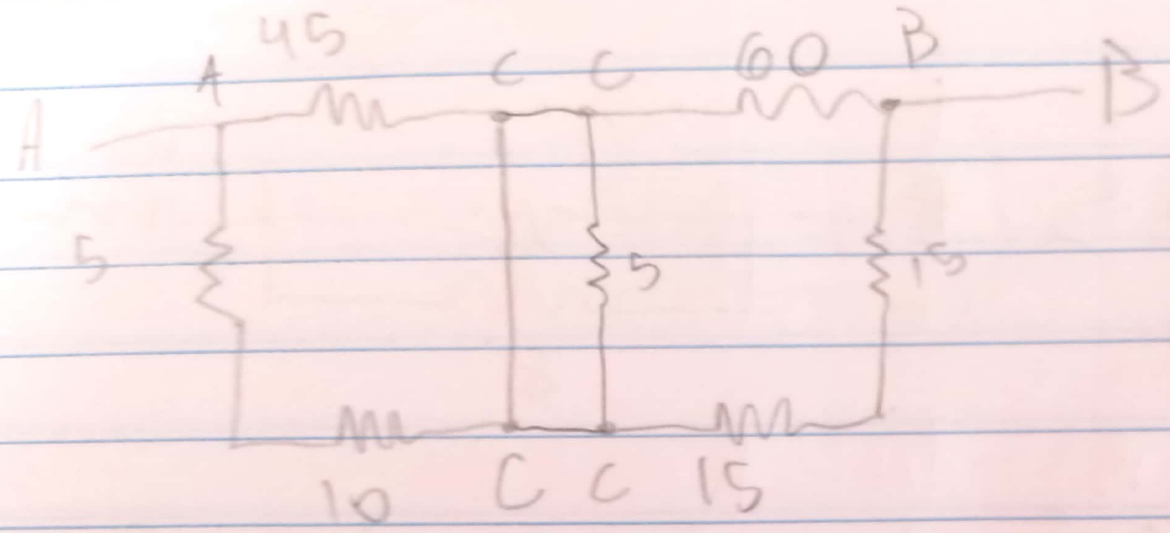
1



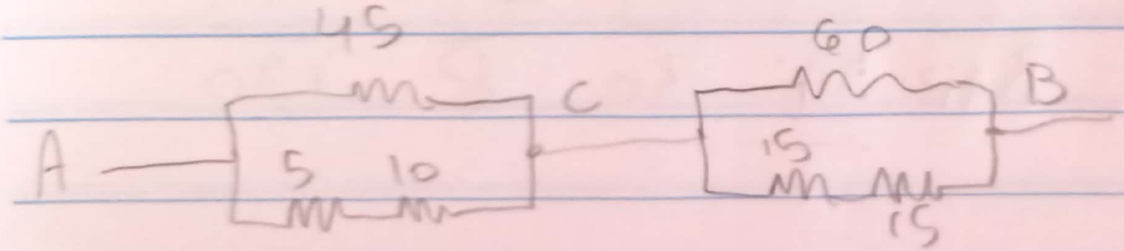


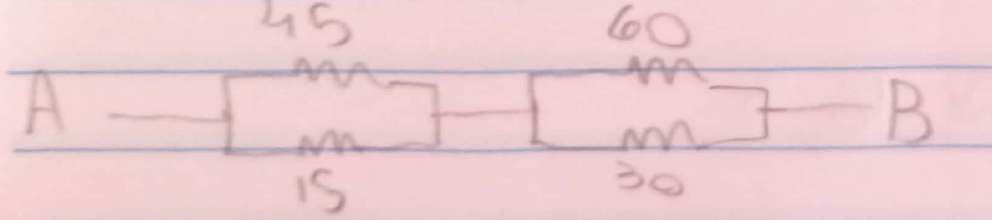
$$\frac{1}{Req} = \frac{1}{16} + \frac{1}{20} + \frac{1}{80} \Rightarrow \frac{1}{Req} = \frac{10}{8} \Rightarrow \boxed{Req = 8\,\Omega}$$

(2)

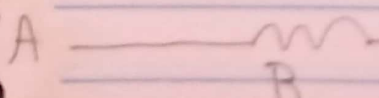


$$R_{eq} = 31{,}25\ \Omega$$



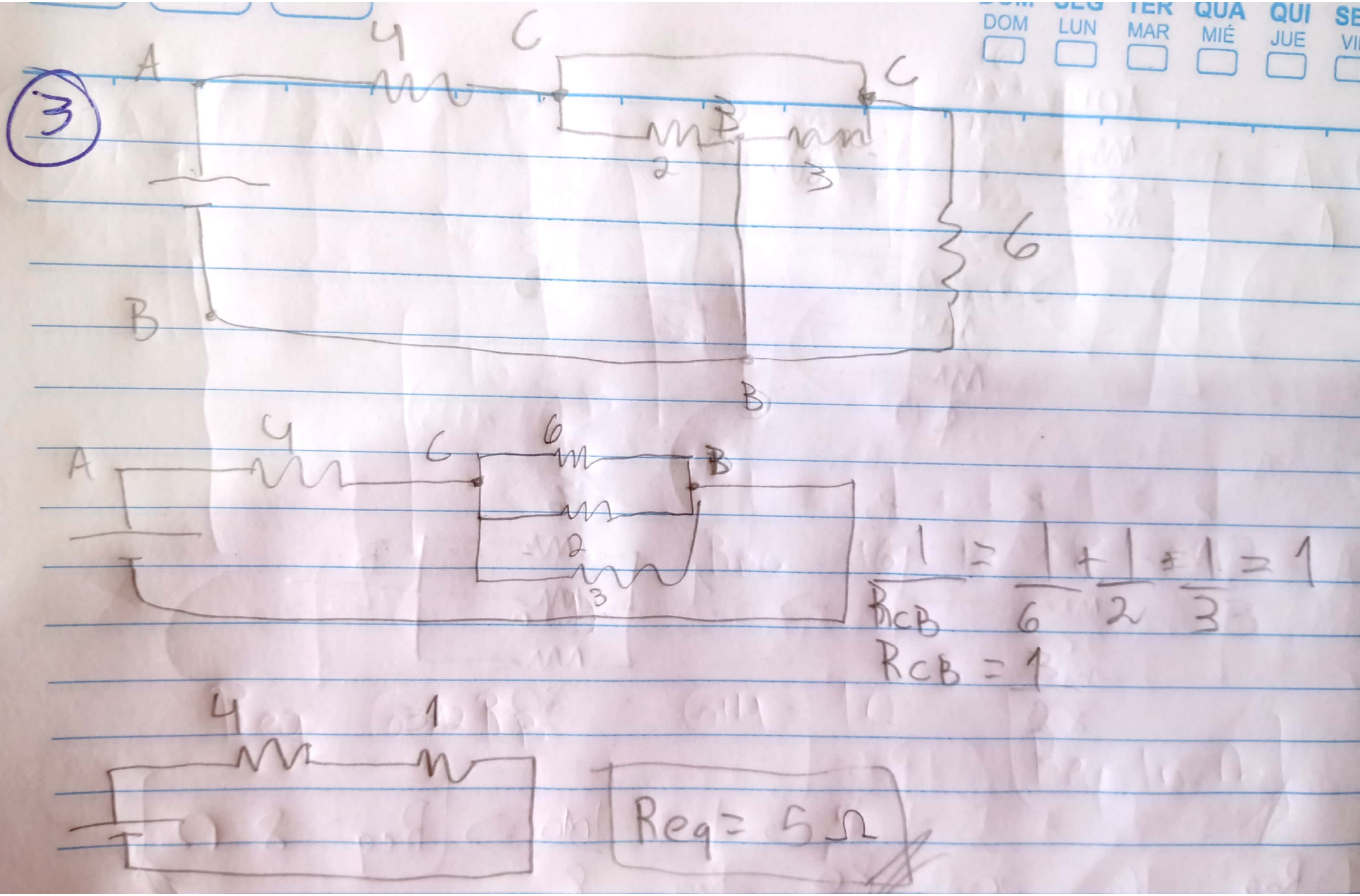


$$\frac{1}{R_1} = \frac{1}{45} + \frac{1}{15} \Rightarrow \frac{1}{R_1} = \frac{4}{45} \Rightarrow R_1 = 11{,}25$$

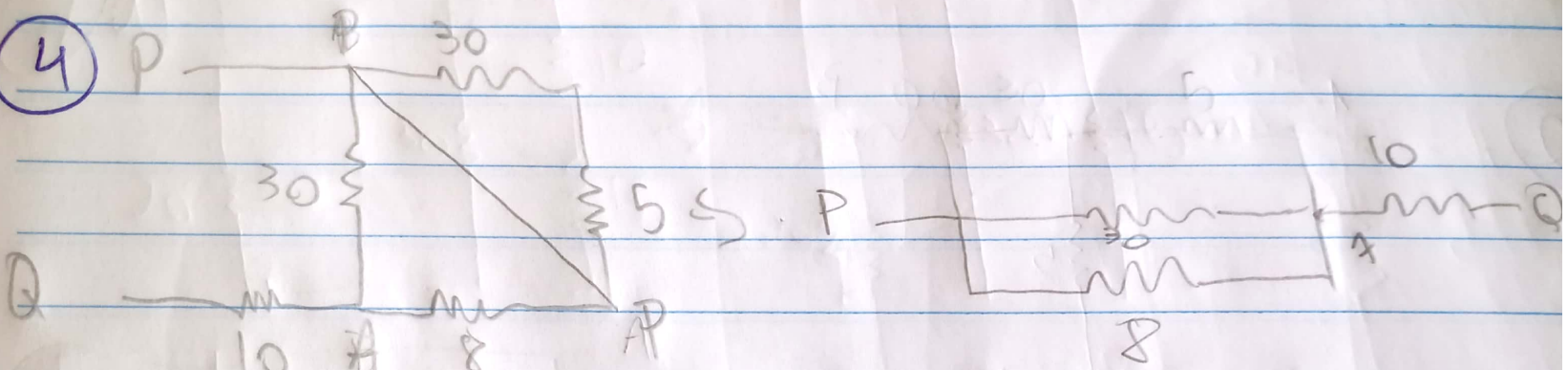


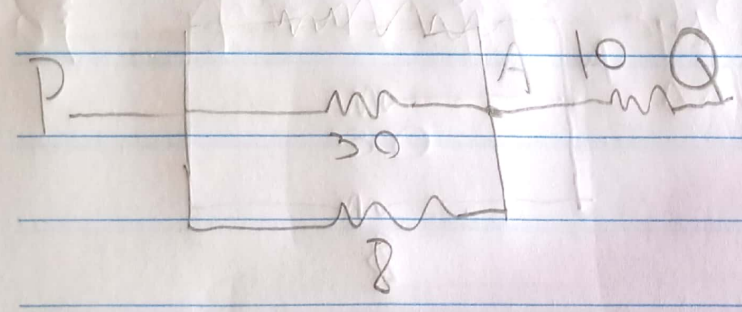
$$\frac{1}{R_2} = \frac{1}{60} + \frac{1}{30} = \frac{1}{20} \Rightarrow R_2 = 20 \qquad R_{eq} = R_1 + R_2$$

$$R_{eq} = 31{,}25\ \Omega$$



(4)



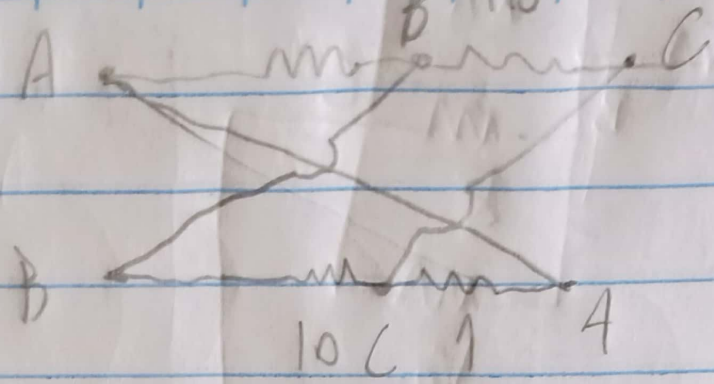


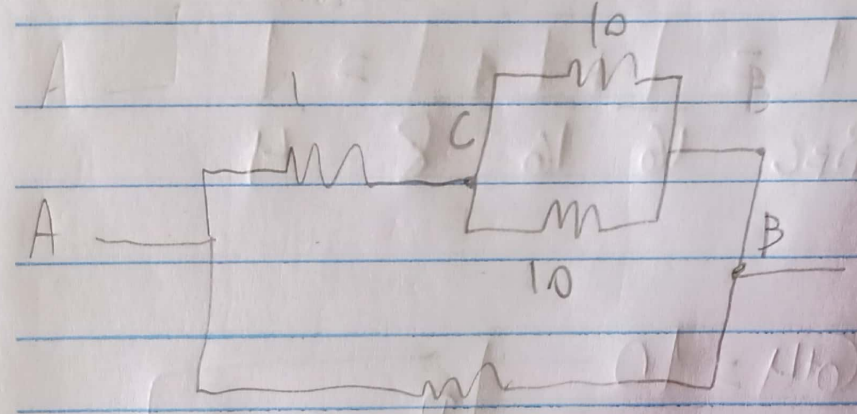
$$\frac{1}{R_{AP}} = \frac{1}{30} + \frac{1}{8} = \frac{19}{120}$$

$$R_{eq} = R_{AP} + 10 = 10 + \frac{120}{19} \approx 16,3$$

$$R_{eq} \approx 16,3\ \Omega$$

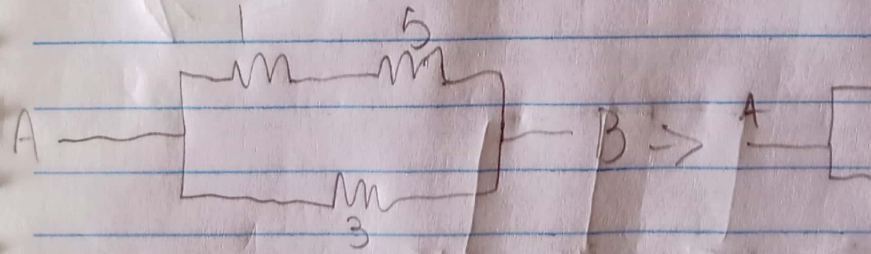
(5)





$$\frac{1}{R_{CB}} = \frac{1}{10} + \frac{1}{10} = \frac{1}{5}$$

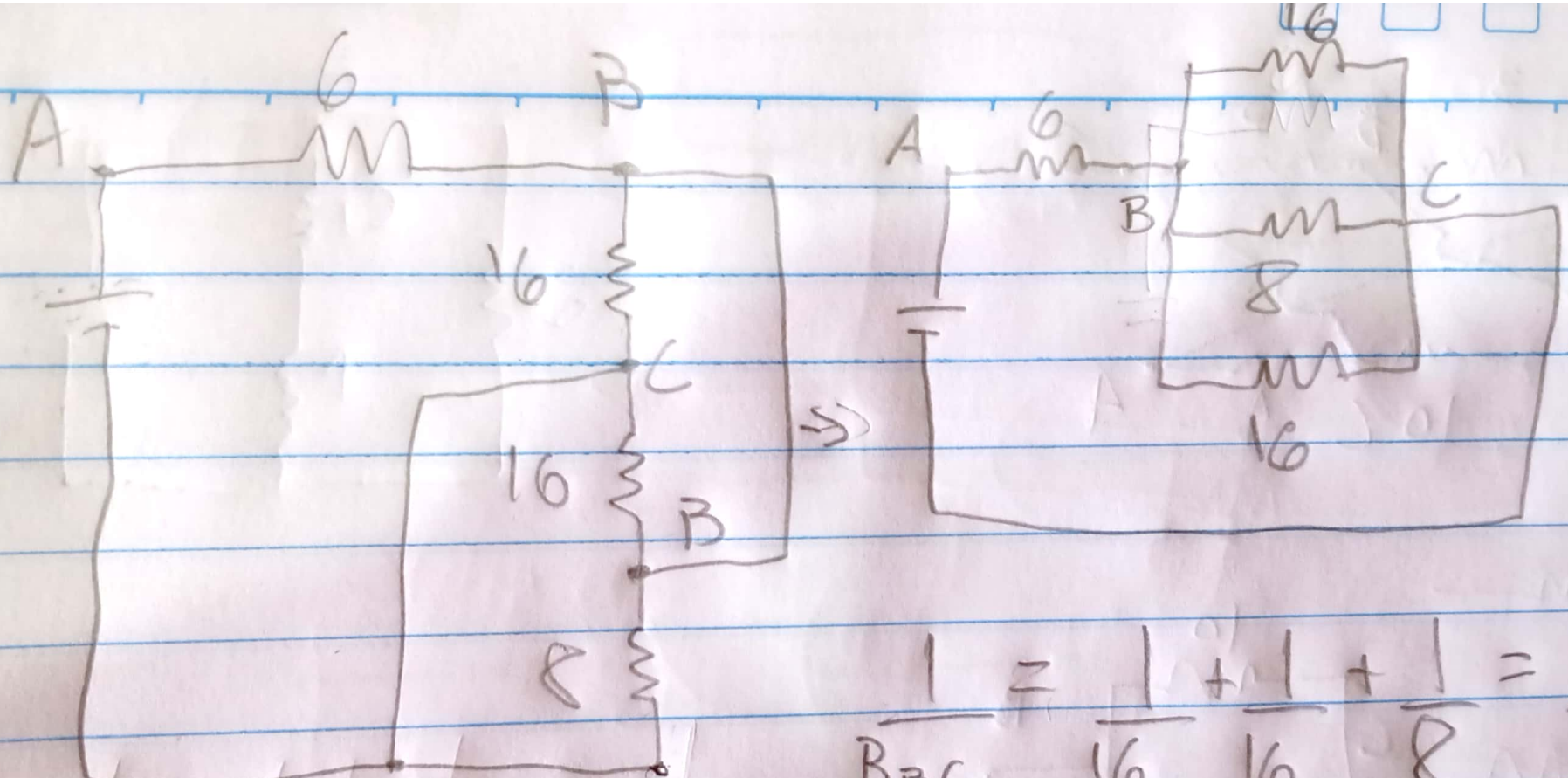
$$R_{CB} = 5$$



$$\frac{1}{R_{eq}} = \frac{1}{6} + \frac{1}{3} = \frac{1}{2}$$

$$R_{eq} = 2\ \Omega$$

(6)

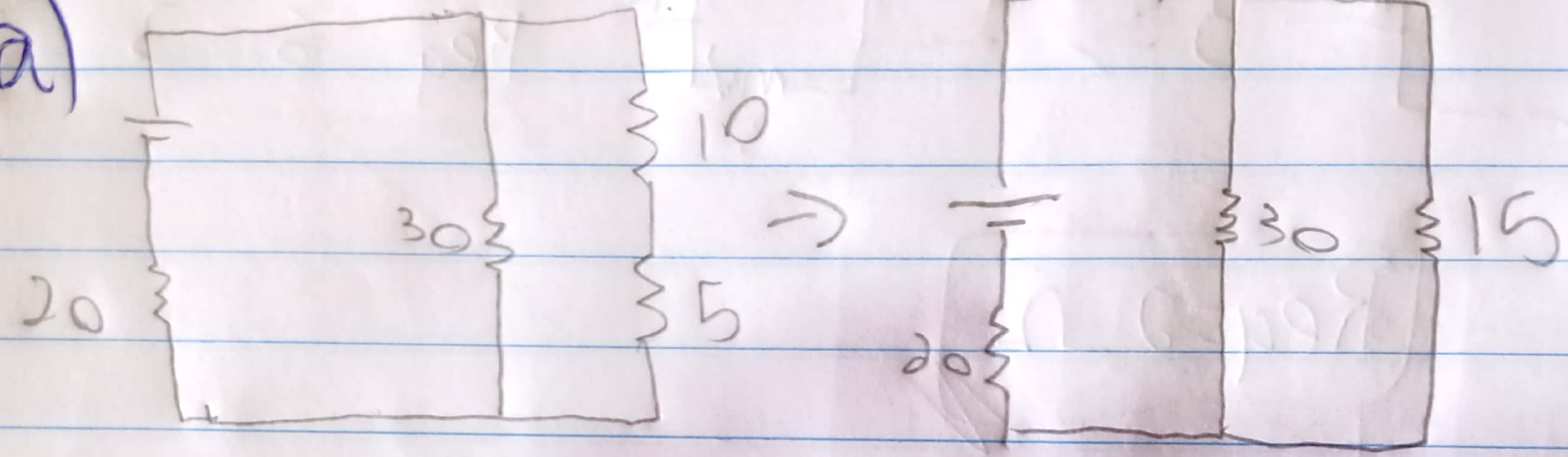


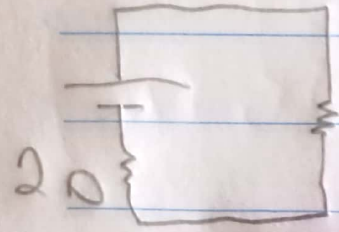
$$\frac{1}{R_{BC}} = \frac{1}{16} + \frac{1}{16} + \frac{1}{8} = \frac{1}{4}$$

$$R_{eq} = 6 + R_{BC} = 6 + 4 = 10$$

$$\boxed{R_{eq} = 10\ \Omega}$$

7) a)





R_5

$R_5 = \frac{30 \cdot 15}{30 + 15} = 10$

$R_{eq} = R_5 + 20$

$R_{eq} = 30\ \Omega$

b)

Resistor	Corrente	Tensão	Potência
R_1	3 A	60 V	180 W
R_2	1 A	30 V	30 W
R_3	2 A	20 V	40 W
R_4	2 A	10 V	20 W
Potência consumida			270 W
Potência fornecida			270 W

$U_{total} = R_{eq} \cdot i_{total} \Rightarrow i_{total} = 90/30 = 3A$

$i_1 = i_{total} = 3A$ $\quad U_1 = R_1 \cdot i_1 = 20 \cdot 3 = 60V$

Como R_1 está em série com os outros R, $U = U_1 + U_{paralelo} \Rightarrow U_{paralelo} = 30$, dessa forma $U_2 = 30V$.

$U_2 = R_2 \cdot i_2 \Rightarrow i_2 = \frac{30}{30} = 1A$

Por estarem em paralelo $i_{total} = i_{2,} + i_{3,4}$ Dessa forma $i_{3,4} = 2A$

$U_3 = R_3 i_3 = 20V$ $U_4 = R_4 i_4 = 10V$

$P_1 = i_1 U_1 = 180W$ $P_2 = i_2 U_2 = 30W$ $P_3 = i_3 U_3 = 40W$
$P_4 = i_4 U_4 = 20W$ $P_{consumida} = P_1 + P_2 + P_3 + P_4 = 270W$
$P_{fornecida} = U_{total} i_{total} = 270W$

c) São iguais.