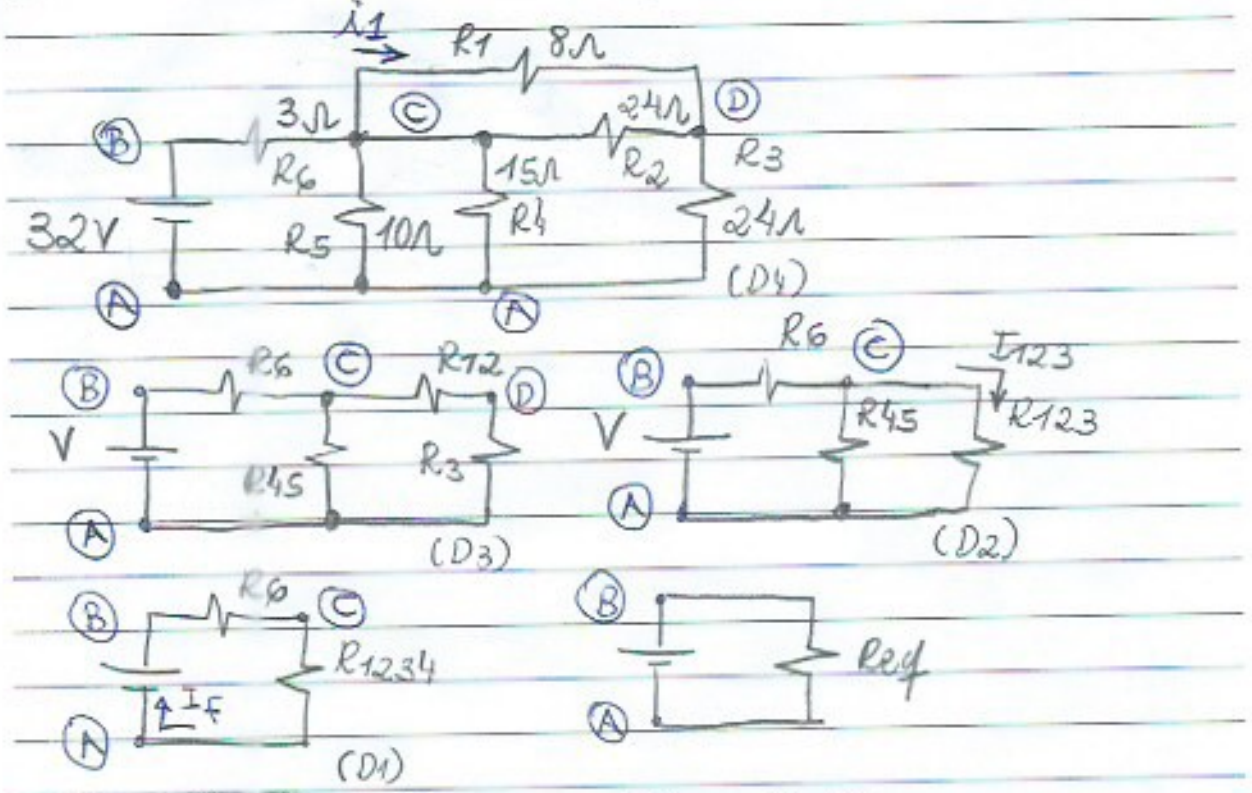
① Cálculo de potência na fonte de 32V:




$R_{12} = R_1 // R_2 = 6\,\Omega$ $\quad R_{45} = R_4 // R_5 =$

$R_{123} = R_{12} + R_3 = 30\,\Omega$ $\quad R_{12345} = R_{123} // R_{45} = 5\,\Omega$

$R_{eq} = R_6 + R_{1234} = 8\,\Omega$

$$P_f = \frac{V_f^2}{R_{eq}} = \frac{32^2}{8} = 128\ W //$$

② Cálculo de $i_1$:

Corrente na fonte: $I_f = \frac{V_f}{R_{eq}} = \frac{32}{8} = 4\,A$

Do desenho D1: $V_{AC} = R_{1234} \cdot I_f = 5 \cdot 4 = 20\,V$

Do desenho D2: $V_{123} = V_{AC} = 20\,V$

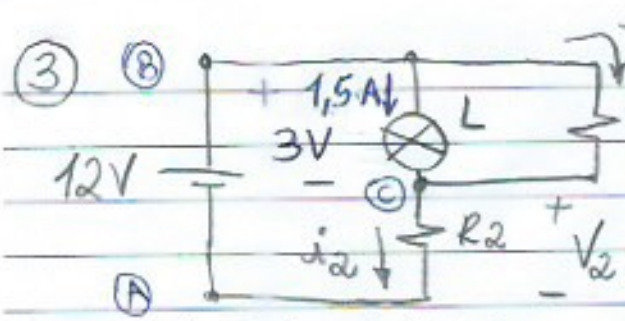
$$I_{123} = \frac{V_{123}}{R_{123}} = \frac{20}{30} = 0{,}667\,A$$

Do desenho D3: $V_{12} = V_{CD} = R_{12} \cdot I_{12} = 6 \cdot 0{,}667 = 4\,V$

$I_{123} = I_{12}$

$V_{12} = V_1 = V_2 \Rightarrow I_1 = \frac{V_1}{R_1} = \frac{4}{8} = 0{,}5\,A = 500\,mA //$

③




$V_1 = V_L = 3\ V$

$V_2 = 12 - V_1 = 9\ V$

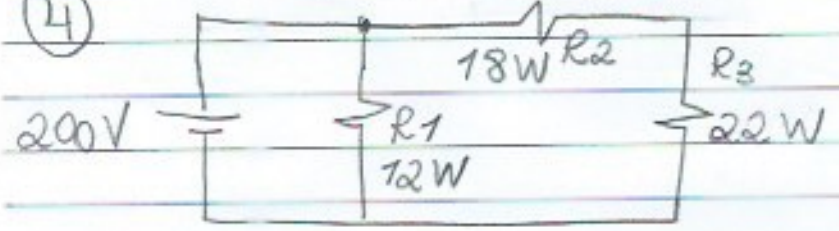
Do nó C: $1,5 + i_1 = i_2 \Rightarrow 1,5 = i_2 - i_1$

$1,5 = \frac{V_2}{R_2} - \frac{V_1}{R_1}$ mas $R_1 = R_2 = R$, então:

$1,5 = \frac{V_2 - V_1}{R} \Rightarrow R \cdot 1,5 = V_2 - V_1 \Rightarrow R = \frac{9-3}{1,5}$

$R = 4\ \Omega$ //

④




$P_2 + P_3 = 40\ W = P$

$I_2 = I_3 = I = \frac{P}{V} = \frac{40}{200} = 0,2\ A$

$R_2 = \frac{P_2}{I_2^2} = \frac{18}{0,2^2} = 450\ \Omega$ // $R_3 = \frac{P_3}{I_3^2} = \frac{22}{0,2^2} = 550\ \Omega$ //

⑤

$P_t = V_{rede} \cdot I_{fusível} = 220 \cdot 16 = 3.520\ W$

$P_{arcond} = 800\ W$

$Q_T = \frac{P_t}{P_{arcond}} = \frac{3.520}{800} = 4,4$ unidades

⇒ Para não queimar o fusível = 4 und //