UNIVERSIDADE ESTADUAL DE MONTES CLAROS - UNIMONTES
CENTRO DE CIÊNCIAS EXATAS E TECNOLÓGICAS – CCET
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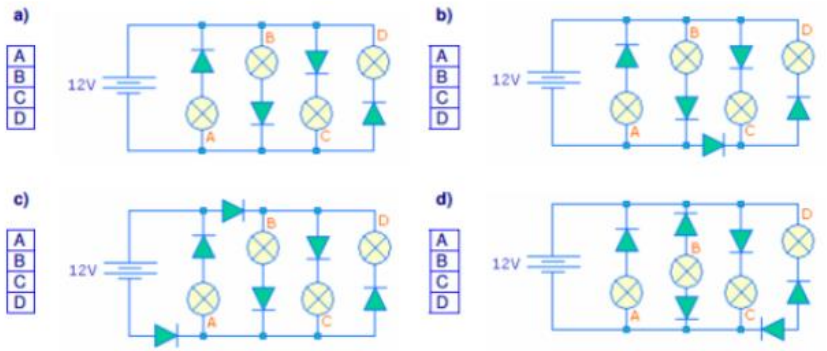
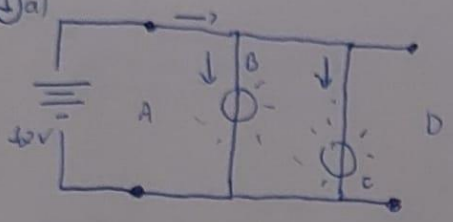
MATRÍCULA: 100015057

Lista de exercícios – Diodo (Básica)

1. Qual Lâmpada acenderá?

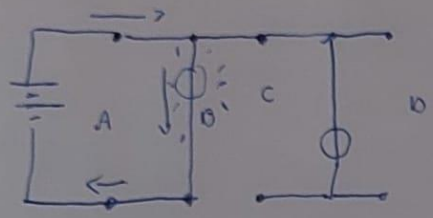


1) a)



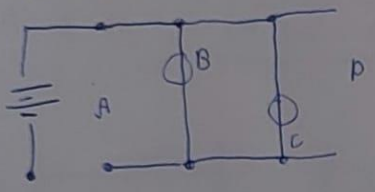
B e C

b)



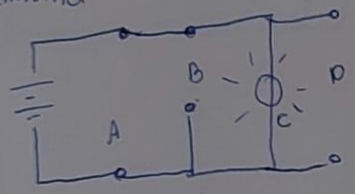
Apenas a B

c)



Nenhuma

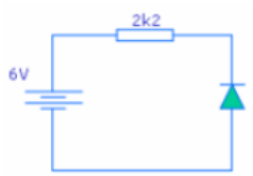
d)



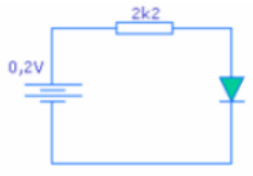
Apenas a D

2. Qual corrente que circula pelos diodos de silício? Justifique.

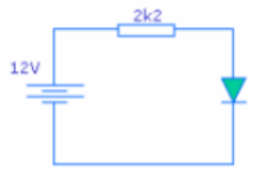
a)



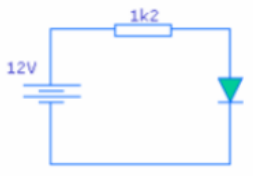
b)

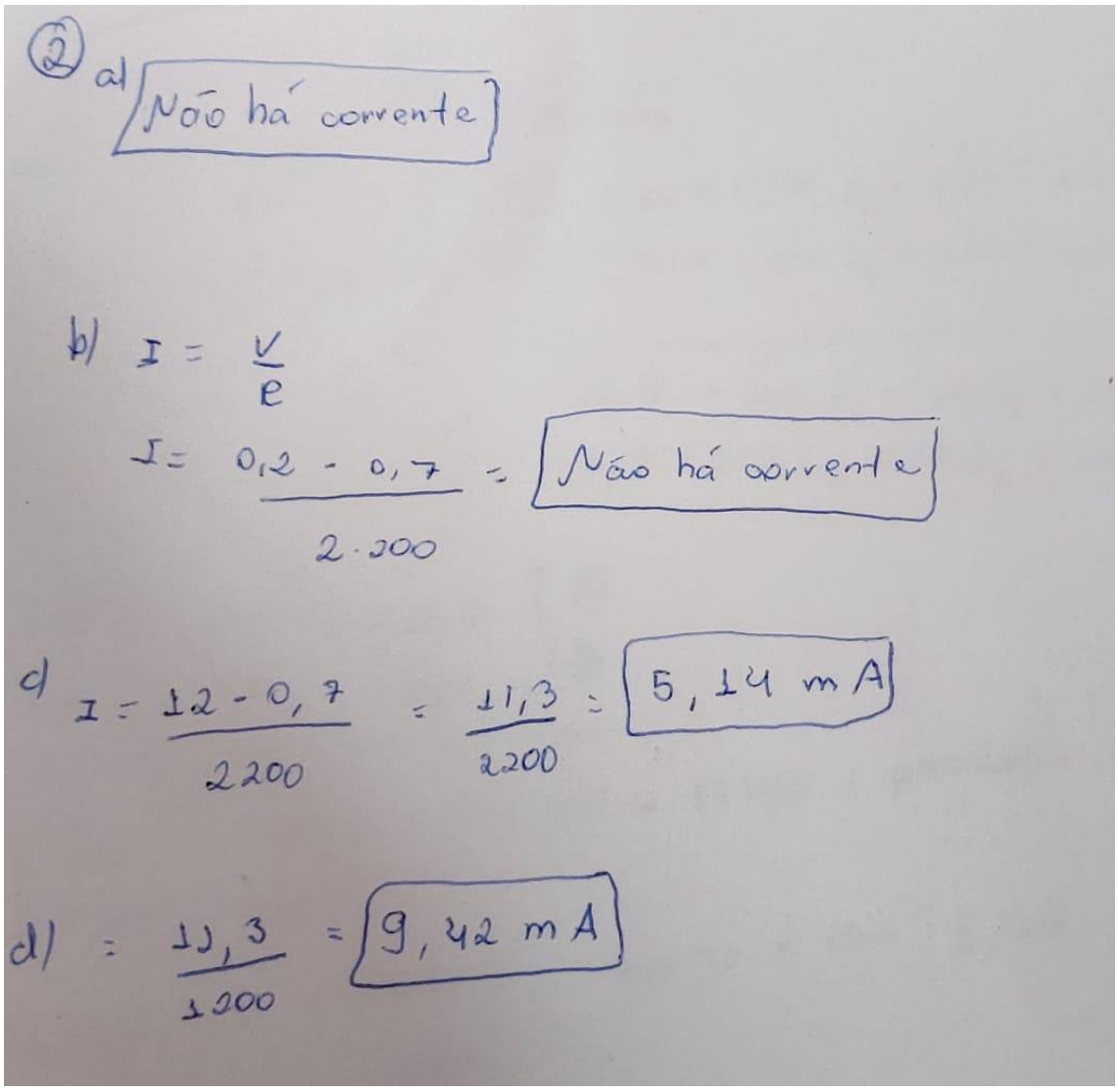


c)



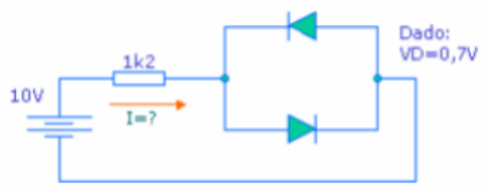
d)

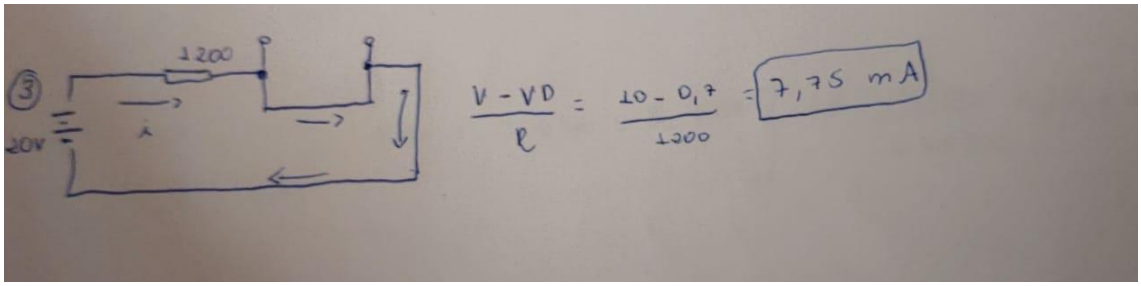




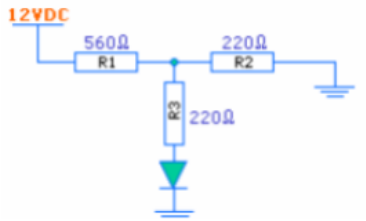
a) Não há corrente pois o diodo está reversamente polarizado.
b) Não há corrente pois o diodo de silício precisa de 0,7 V para funcionar, mas a fonte só fornece 0,2V.

3. Determine a corrente I representada no circuito abaixo.

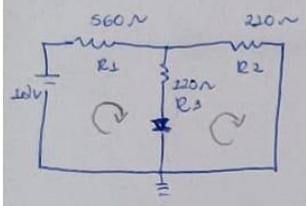




4. Quais as tensões e correntes nos componentes. (Diodo de silício).



4)



Malhas

1) → $-12\,V + 560\,i_1 + 220\,(i_1 - i_2) + 0{,}7\,V = 0$

2) → $-0{,}7\,V + 220\,i_2 + 220\,(i_2 - i_1) = 0$

$-11{,}3 + 560\,i_1 + 220\,i_2 - 220\,i_1 = 0$

$-0{,}7 + 220\,i_2 + 220\,i_2 - 220\,i_1 = 0$

$780\,i_1 - 220\,i_2 = 11{,}3$ ①

$-220\,i_1 + 440\,i_2 = 0{,}7$ ②

DET

$\begin{vmatrix} 780 & -220 \\ -220 & 440 \end{vmatrix}$ $343200 - 18400 = 294800$

$I_1 \Rightarrow \begin{vmatrix} +11{,}3 & -220 \\ 0{,}7 & 440 \end{vmatrix} = 4973 + 154 = 5126$

$I_1 = \frac{5126}{294800} = 17{,}4\ mA$

$I_2 \Rightarrow \begin{vmatrix} 780 & 11{,}3 \\ -220 & 0{,}7 \end{vmatrix} = 546 + 2486 = 3032$

$I_2 = \frac{3032}{294800} = 10{,}3\ mA$

$I_3 = I_1 - I_2$

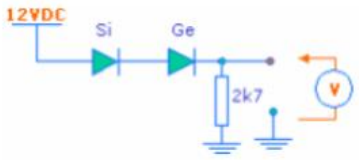
$I_3 = 17{,}4 - 10{,}3 = 7{,}1\ mA$

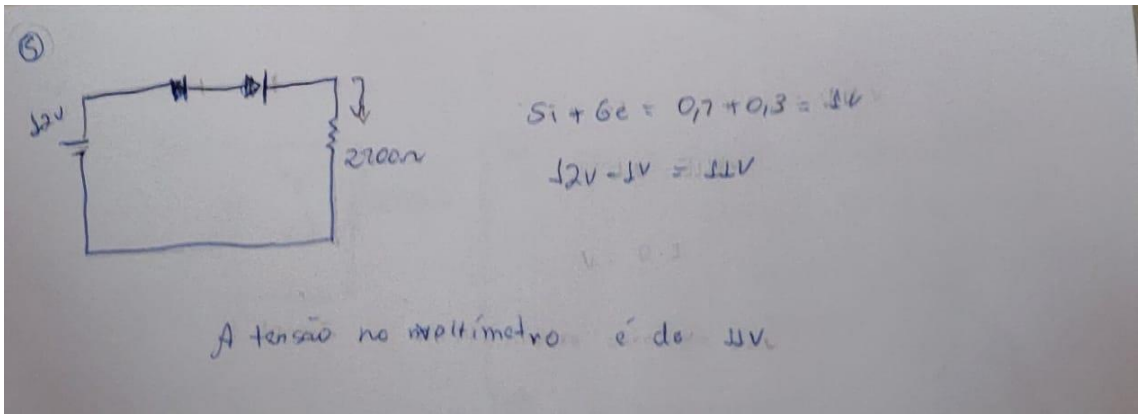
$E_{R1} = I_1 \cdot R_1 = 17{,}4 \cdot 560 = 9{,}74\,V$

$E_{R2} = I_2 \cdot R_2 = 10{,}3 \cdot 220 = 2{,}27\,V$

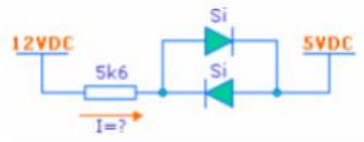
$E_{R3} = I_3 \cdot R_3 = 7{,}1 \cdot 220 = 1{,}56\,V$

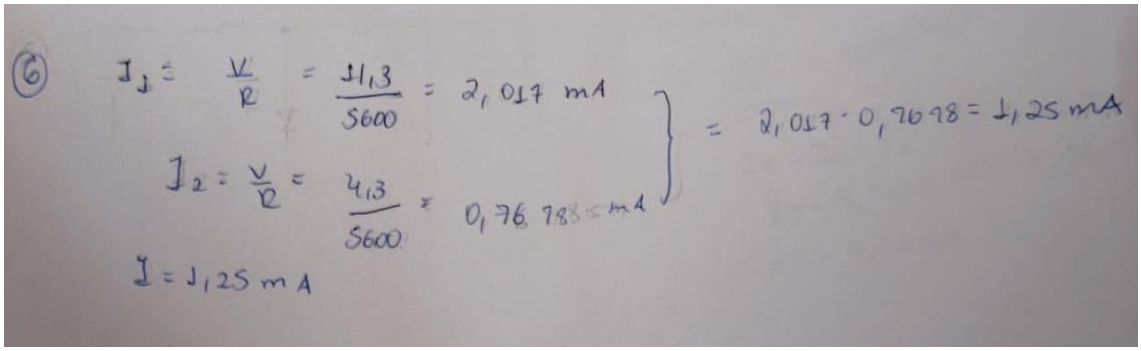
5. Qual a tensão no voltímetro?



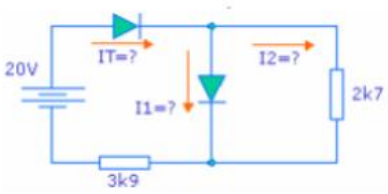


6. Determine a corrente I indicada no circuito

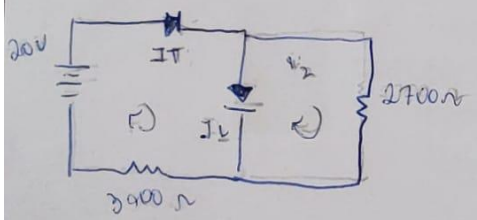




7. Quais as correntes IT, I1 e I2 no circuito abaixo. (Diodo Silício).



7)-



① $-20 + V_{D1} + V_{D2} + V(3900) = 0$

$3900 I_1 = 20 - V_{D1} - V_{D2}$

$I_1 = \frac{20 - 0,7 - 0,7}{3900} = 4,769$

$I_1 = 4,77\ mA$

② $I_2 \cdot 2700 + V_{D2} = 0$

$2700 I_2 = 0,7$

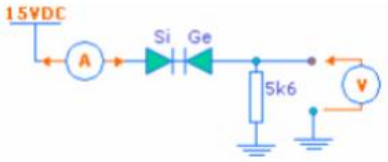
$I_2 = \frac{0,7}{2700} = 259,26\ \mu A$

$I_T = I_2 - I_1 = 4,769 - 0,259$

$I_T = 4,77 - 0,259 = 4,51\ mA$

$I_T = 4,51\ mA$

8. Qual a tensão e corrente medida pelos instrumentos.



5)- A tensão V é zero.

A corrente também é zero.