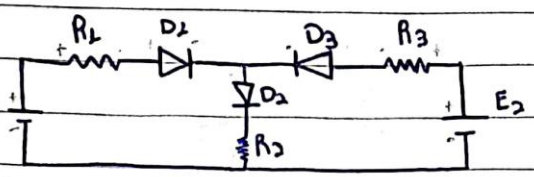
Lista) Diodos

8)



$V_D = 0,7V$ $R_1 = R_2 = R_3 = 1k\Omega$

a) $V_2 = \mathcal{E}_1 - I_{R1} \cdot R_1 - V_{D1}$ $I_{R2} = \frac{V_2 - V_{D2}}{R_2}$ $I_{R2} = 2 \cdot I_{R1}$

$I_{R1} = \frac{\mathcal{E}_1 - V_{D1} - V_{D2}}{2R_2 - R_1} = \frac{10 - 0,7 - 0,7}{4000 - 1000} = 2,8667mA = I_{R3}$ $I_{R2} = 5,73mA$

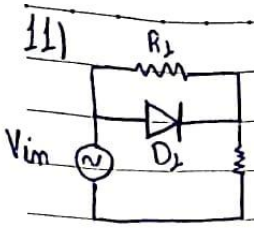
b) $\mathcal{E}_2 > \mathcal{E}_1$, D_1 reverso, D_2 e D_3 diretamente polarizados $\therefore I_{R1} = 0A$

$I_{R3} = \frac{\mathcal{E}_2 - V_{D3} - V_{D2}}{R_3 + R_2} = \frac{10 - 1,4}{2000} = 4,3mA = I_{R2}$

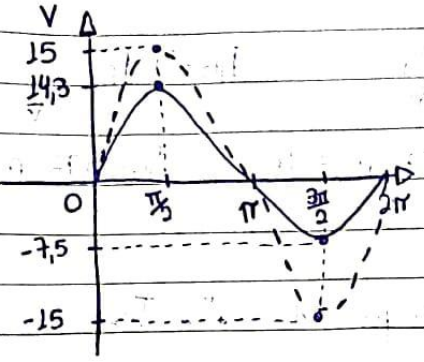
c) $\mathcal{E}_1 > \mathcal{E}_2$, D_3 reverso, D_2 e D_1 diretamente polarizados $\therefore I_{R3} = 0A$

$I_{R1} = \frac{\mathcal{E}_1 - V_{D1} - V_{D2}}{R_1 + R_2} = \frac{5 - 1,4}{2000} = 1,8mA = I_{R2}$

11)



$V_{in} = 15 \sin(377t)$ $R_1 = R_2 = 1K\Omega$ $V_D = 0,7V$



$0 \leq V_{in} \leq 1,4$ diodo não conduz

$V_{in} = V_{R1} + V_{R2}$

$\hookrightarrow V_{R1} = V_{R2}$

Como $V_{in} = 2V_{R2}$ $\boxed{V_{R2} = \frac{V_{in}}{2}}$

$1,4 \leq V_{in} \leq 15$ diodo conduz

$V_{in} = V_{R2} + 0,7$

$\boxed{V_{R2} = V_{in} - 0,7}$

$-15 \leq V_{in} \leq 0$ diodo inversamente polarizado

$V_{in} = V_{R1} + V_{R2} \therefore V_{R1} = V_{R2} \rightarrow \boxed{V_{R2} = \frac{V_{in}}{2}}$