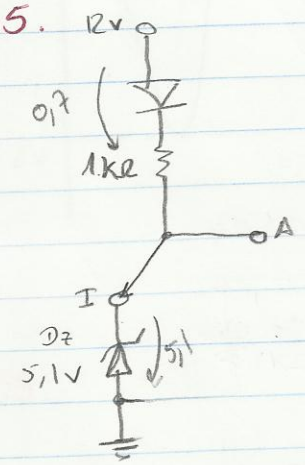
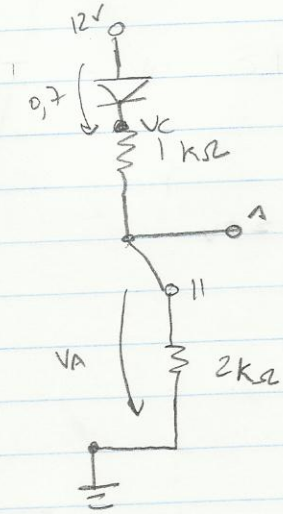
Possíveis datas para o teste
≈ 3/4 → 25/6

Díodo Zener a partir de uma certa tensão começa a conduzir, mesmo inversamente polarizado.

45.



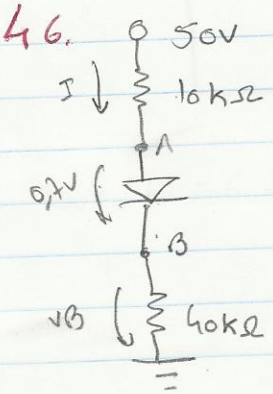


II → $V_A = \frac{2k}{2k+1k} \times 11,3$

$V_A = 7,5V$

I → $V_A = 5,1V$

46.



$V_B = 40 \times I$

$-50 + 10kI + 0,7 + 40kI = 0$

$I = \frac{49,3}{50}$

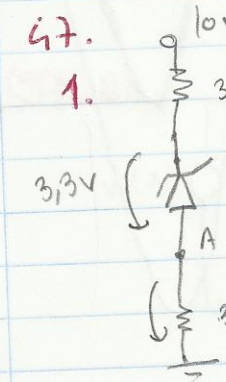
$V_B = \frac{40}{50} \times 49,3 = 39,44$

$V_A = 39,44 + 0,7 = 40,14$

Díodos ideais → quando polarizados directamente a queda de tensão é 0V.

47.

1.

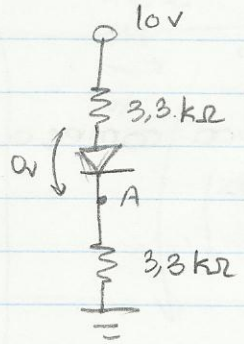


$V_A = 3,3k \times I = 3,3 \times 1,015 = 3,35V$

$-10 + 3,3kI + 3,3 + 3,3kI = 0$

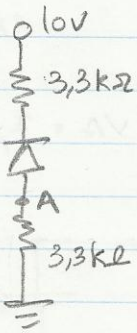
$I = \frac{6,7}{6,6} = 1,015 mA$

2.



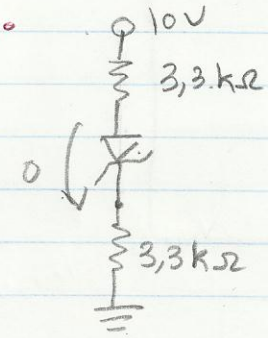
$$VA = \frac{3,3}{3,3+3,3} \times 10 = 5V$$

3.



$VA = 0V$

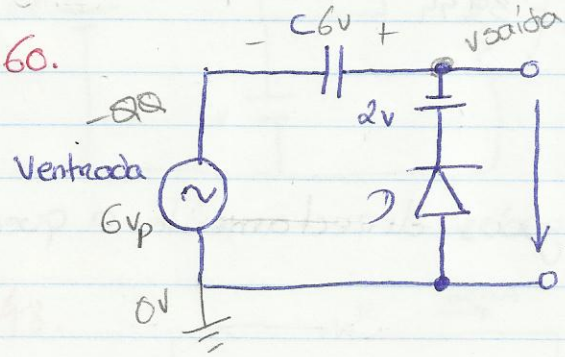
4.



$$VA = \frac{3,3}{3,3+3,3} \times 10 = 5V$$

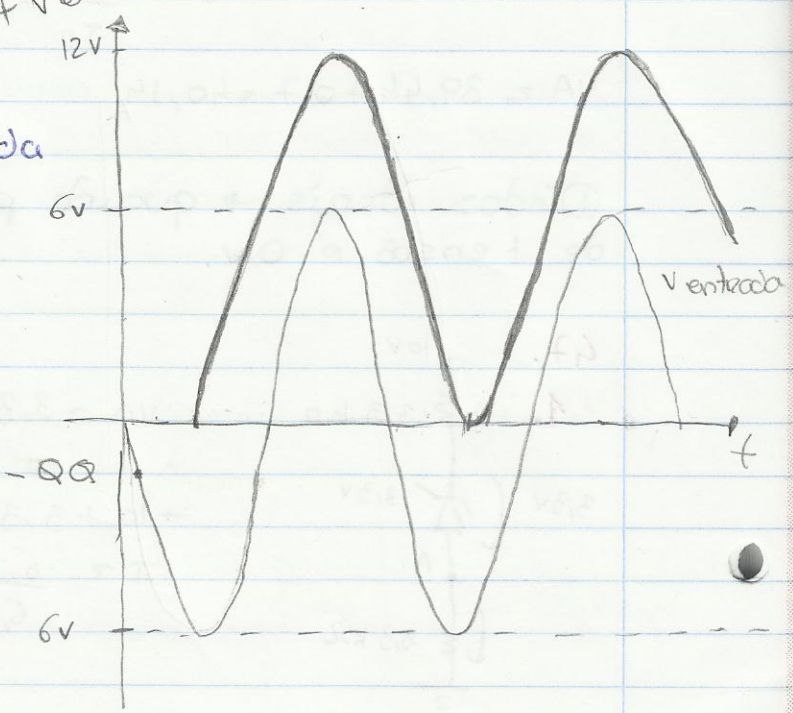
OUTRAS APLICAÇÕES

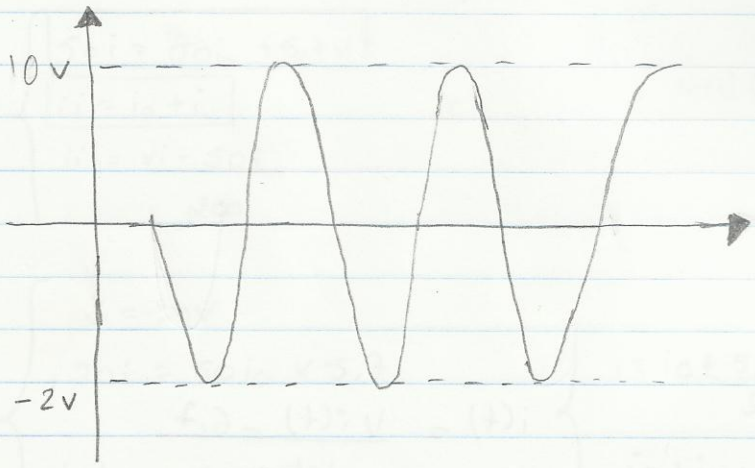
60.



$v_{saída} = V_C + v_{entrada}$

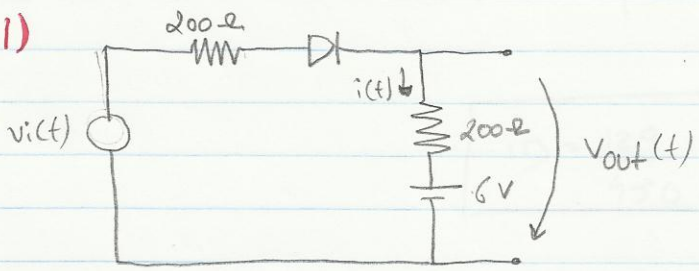
$= 6 + v_{entrada}$

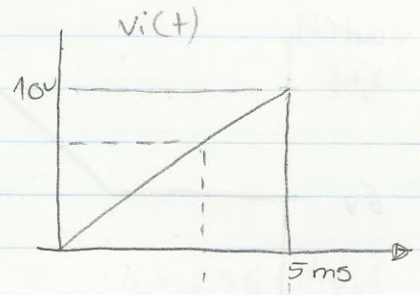




58.

(58.1)

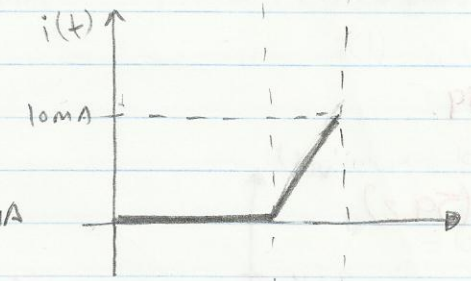


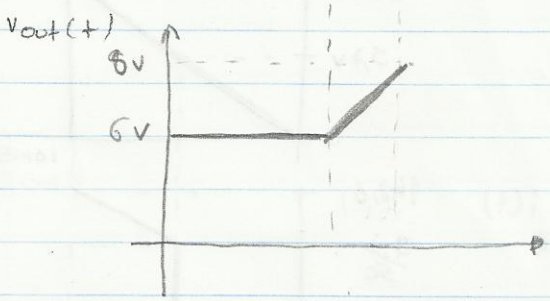


$V_{out}(t) = 6 + 200\, i(t)$

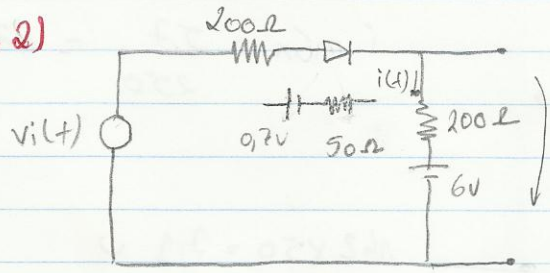
$$i(t) = \frac{v_i(t) - 6}{400}$$

$$i_{máx} = \frac{10 - 6}{400} = 10\,mA$$

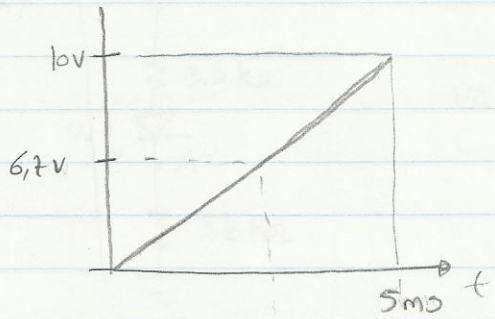


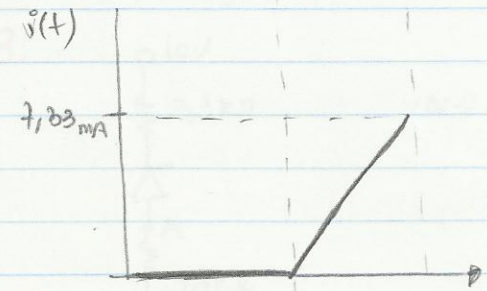


(58.2)



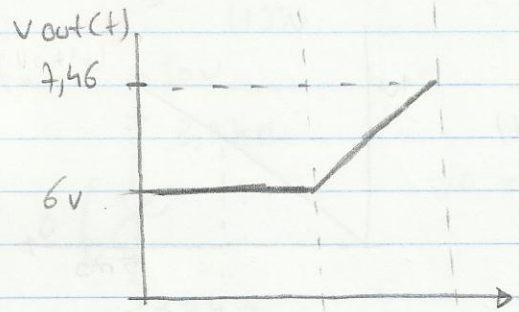
$V_{out}(t) = 6 + 200\, i(t)$





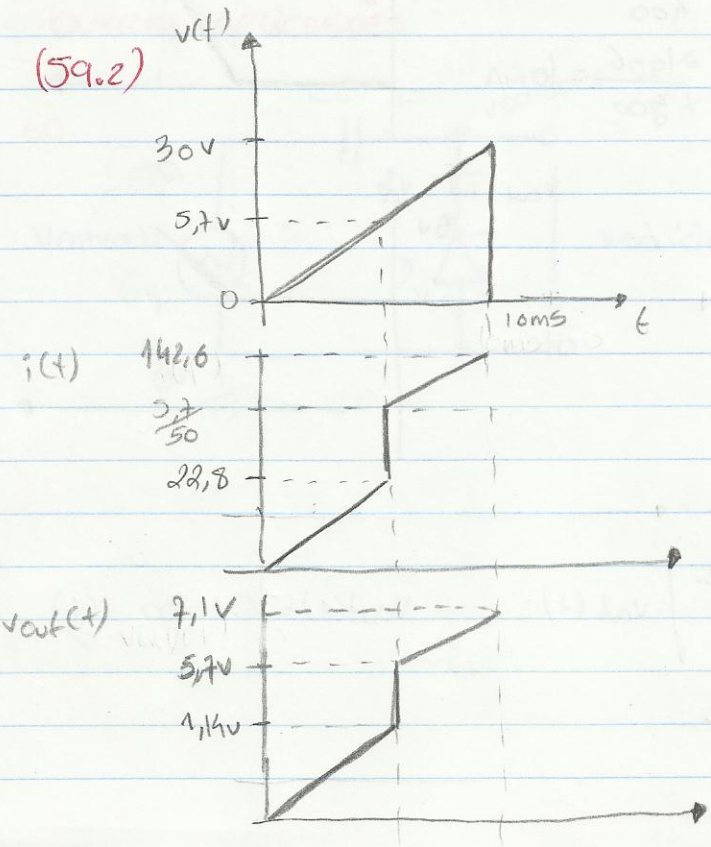
$$i(t) = \frac{v_i(t) - 6,7}{450}$$

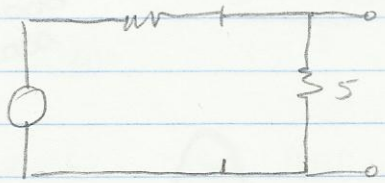
$$i_{máx} = 7,33 \text{ mA}$$



59.

(59.2)





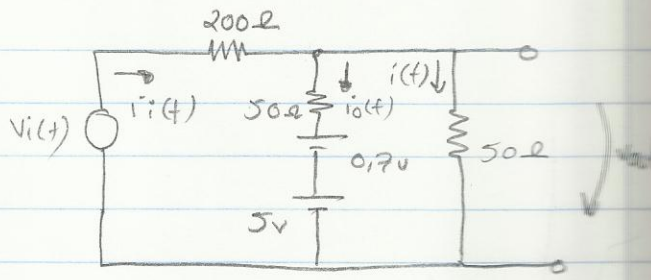
$$v_{out}(t) = 50 \times i(t)$$

$$i(t) = \frac{v_i(t)}{250}$$

$$i_{máx} = \frac{5,7}{250} = 22,8 \text{ mA}$$

$$142 \times 50 = 7,1 \text{ v}$$

$$\begin{cases} 50i = 50i_0 + 5{,}7V \\ i_i = i_0 + i \\ i_i = \dfrac{v_i - 50i}{200} \end{cases}$$ (c1)



$$\begin{cases} v_i = 30V \\ 50i = 50i_0 \times 5{,}7 \\ i_0 + i = \dfrac{30 - 50i}{200} \end{cases} \qquad \begin{cases} i = i_0 + \dfrac{5{,}7}{50} \\ i_D + i_0 + \dfrac{5{,}7}{50} = \dfrac{30 - 50i_d + 5{,}7}{200} \end{cases}$$

$$\begin{cases} 400i_d + 50i_d = 30 + 5{,}7 + 4 \times 5{,}7 \end{cases} \qquad 450\, i_D = 30 - 3 \times 5{,}7$$

$$\boxed{i_D = \frac{12{,}9}{450}}$$

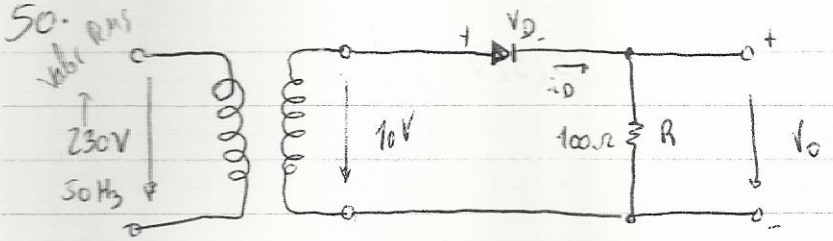
$i_D = 28{,}6\,mA$

$i = 142.6\,mA$

$i_i = 2{,}86 + 142{,}6$

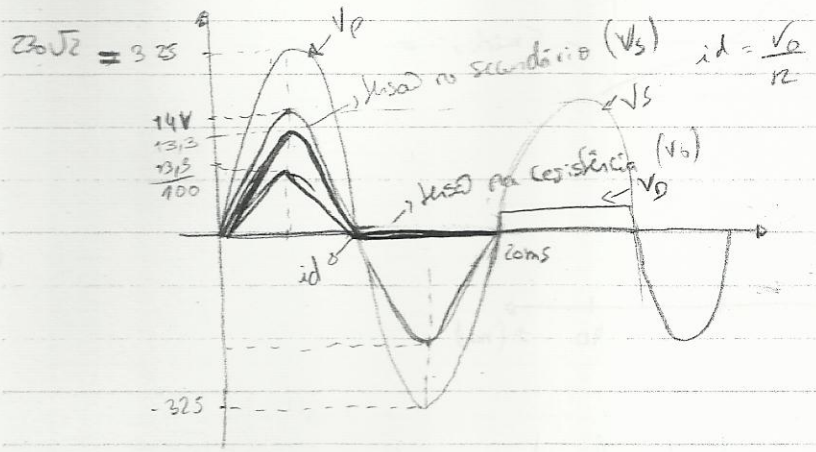
$= 145{,}46\,mA$

50.



- Esboce as formas de onda da tensão e da corrente na carga (resistência R)

Forma de onda da tensão e corrente no diodo.



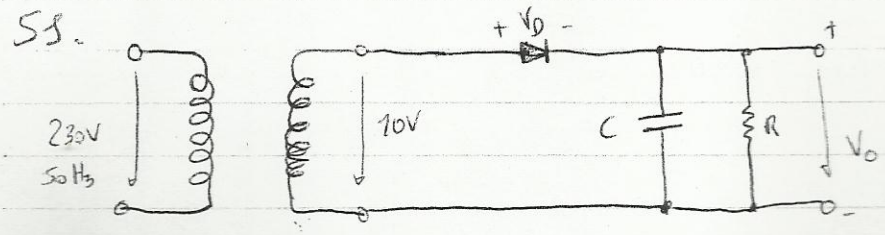
- Qual a razão de transformação do transformador?

$$T = \frac{E_p}{E_s} = \frac{230}{10} = 23$$

- Valor máximo da tensão e corrente na carga.

$$V_{max} = 13,3\ V \qquad i_{max} = \frac{13,3}{100} = 0,133\ A$$

55.



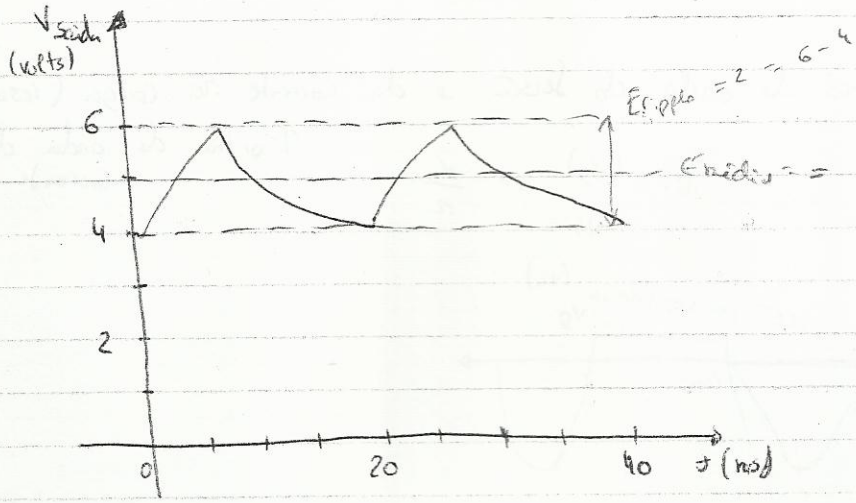
$$V_{c\,máx} = 13,3V$$

$$V_{saída\ máx} = 13,3V$$

$$V_D = V_s - V_c$$
$$= -14 - 13,3$$
$$= -27,3V$$

$$V_{Ripple} = \frac{V_{máx}}{f.R.C} = \frac{13,3}{50 \times 50 \times 1000 \times 16^{-6}} = 5,32\ V$$

53.



- Tipo de rectificador utilizado na fonte de alimentação
  Meia- onda.

- Valor eficaz da tensão no secundário do transformador
  $V_{máx} = 6V$ $\quad V_{ef} = \frac{6}{\sqrt{2}} = 4,24\ V$

- Factor de "ripple" da fonte de alimentação?

  Factor ripple $= \frac{E_{ripple}}{E_{médio}} \times 100\%$

  $= \frac{2}{5} \times 100 = 40\%$