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P2.

1a) ang. de 45° $V_{\text{medio}} = 0V$
 $V_s \text{ pino} = \frac{180 - 1}{2} \Rightarrow 89V$
carga

$$V_{\text{rms}} = \frac{89}{\sqrt{2}} \sqrt{1 - \frac{\pi/4}{\pi} + \frac{\sin(2\pi/4)}{2\pi}}$$

H2 = 20.1 $V_{\text{rms}} = \underline{\underline{60.005 V}}$

b) $P = \frac{V_{\text{rms}}^2}{R} \rightarrow \frac{60.005^2}{50} \rightarrow \underline{\underline{72.014 W}}$

2) $\left(\frac{60 - 25}{20} \right) \cdot 150W \rightarrow P = 262.5$

$$P = \frac{V_{\text{rms}}^2}{R} \rightarrow V_{\text{rms}} = \sqrt{262.5 \times 10} \rightarrow 51.23$$

$$V_{\text{rms}} = V_s \cdot \sqrt{k} \rightarrow \left(\frac{51.23}{127} \right)^2$$

$$k = 0.1627$$

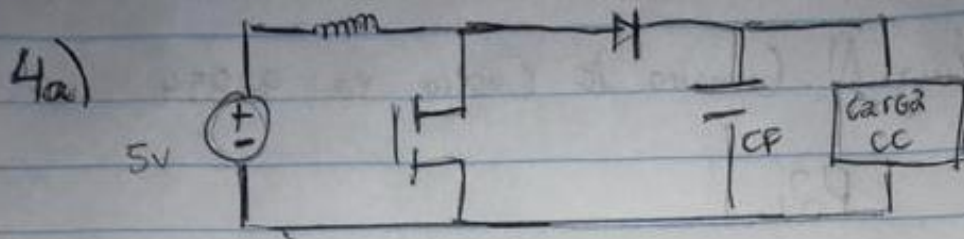
ou $k = \underline{\underline{16.27\%}}$

3) $\alpha = \pi/3$

$$V_s = 220V$$

$$V_{\text{rms}} = 220 \left[\frac{1}{\pi} \left(\frac{\pi}{12} + 3 \cdot \frac{\sin(2\pi/3)}{16} \right) + \sqrt{3} \cdot \frac{\cos(\frac{2\pi}{3})}{16} \right]$$

$$V_{\text{rms}} = \underline{\underline{184.9 V}}$$



$$V_s = 5V$$

$$V_{out} = 15V$$

$$I_{out} = 0,5$$

$$f = 25kHz$$

b)

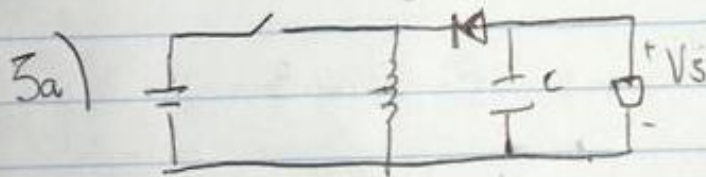
$$V_{out} = \left(\frac{V_{in}}{1-k} \right)$$

$$(1-k) = \left(\frac{V_{in}}{V_{out}} \right) \rightarrow K = 1 - \left(\frac{V_{in}}{V_{out}} \right) \rightarrow K = \underline{\underline{66,6\%}}$$

c.

$$f_{corte} = \frac{1}{2\pi \cdot \sqrt{L \cdot C}}$$

$$L = \left[\frac{1}{(2\pi f_c)^2 \cdot C} \right] \rightarrow L = \underline{\underline{25,3 \text{ mH}}}$$



b)

$$d = \frac{V_s}{V_s + V_e} \rightarrow \frac{50}{50 + 5} \rightarrow d = 0,9091$$

$$\text{ou } d = \underline{\underline{90\%}}$$

c)

$$V_o = R \cdot I_o \rightarrow 50 = R \cdot 0,5 \rightarrow R = 100\Omega$$

$$L = \frac{R(1-d)^2}{2f} \rightarrow L = \frac{100(1-0,9091)^2}{2 \cdot 15000} \rightarrow L = \underline{\underline{2,75 \mu H}}$$

d)

$$C = \frac{V_s \cdot d}{R \Delta V_f} \rightarrow C = \frac{50 \cdot 0,9091}{100 \cdot 60E-3 \cdot 150E3} \rightarrow C = \underline{\underline{50,5 \mu F}}$$

e)

$$f_c = \frac{1}{2\pi \sqrt{LC}} \rightarrow f_c = \frac{1}{2\pi \sqrt{2,75E-6 \cdot 50,5E-6}}$$

$$f_c = \underline{\underline{13,49 \text{ kHz}}}$$