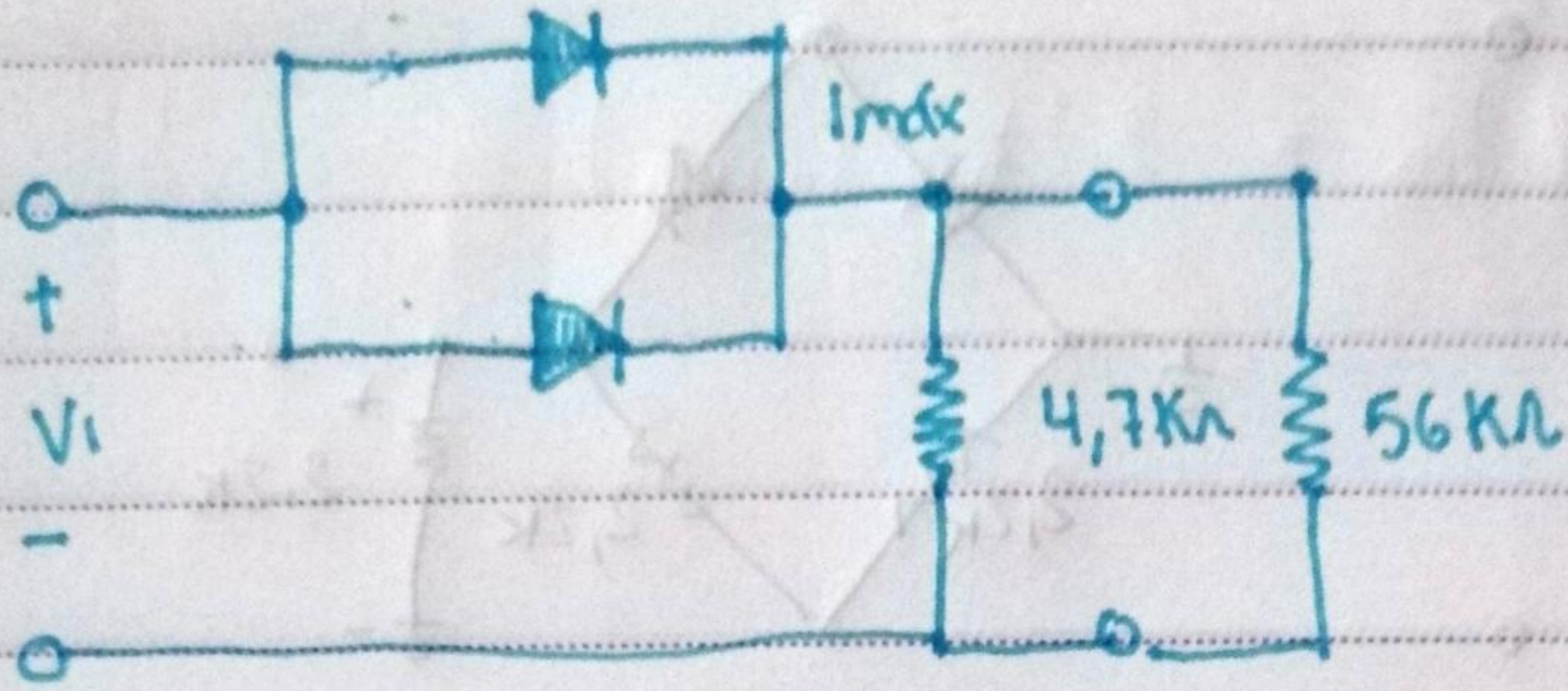
27.



(a) $P_{max} = 14mW = 10,7V) I_D$

$I_D = \frac{14mV}{0,7V} = 20mA$

(b) $4.7K\Omega \,//\, 56K\Omega = 4,34K\Omega$

$V_R = 160V - 0,7V = 159,3V$

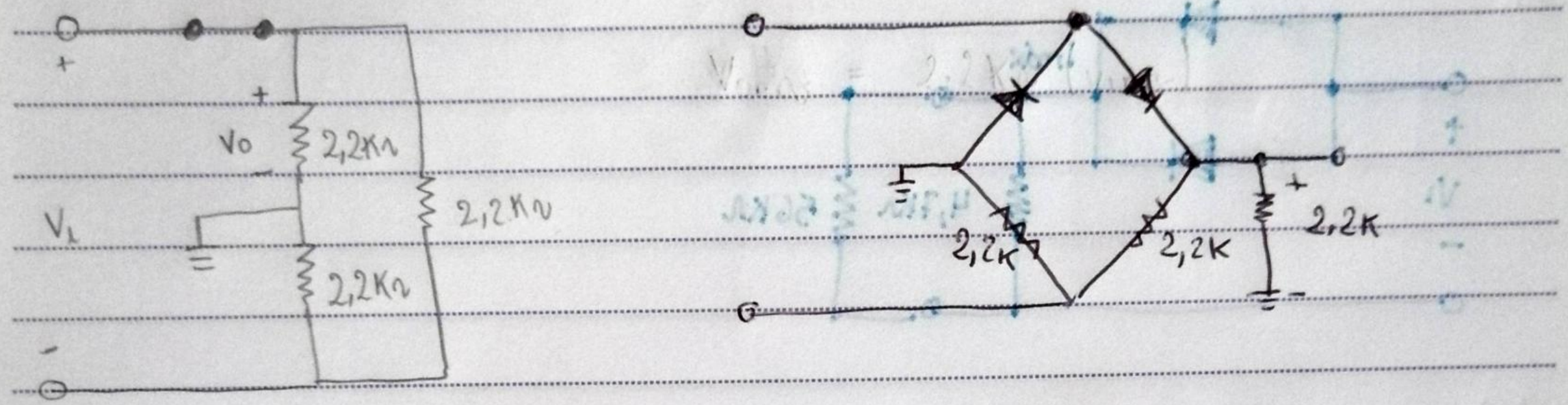
$I_{max} = \frac{159,3V}{4,34K\Omega} = 36,71mA$

(c) $I_{diodo} = \frac{I_{max}}{2} = \frac{36,71mA}{2} = 18,36mA$

(d) $I_D = 20mA > 18,36mA$

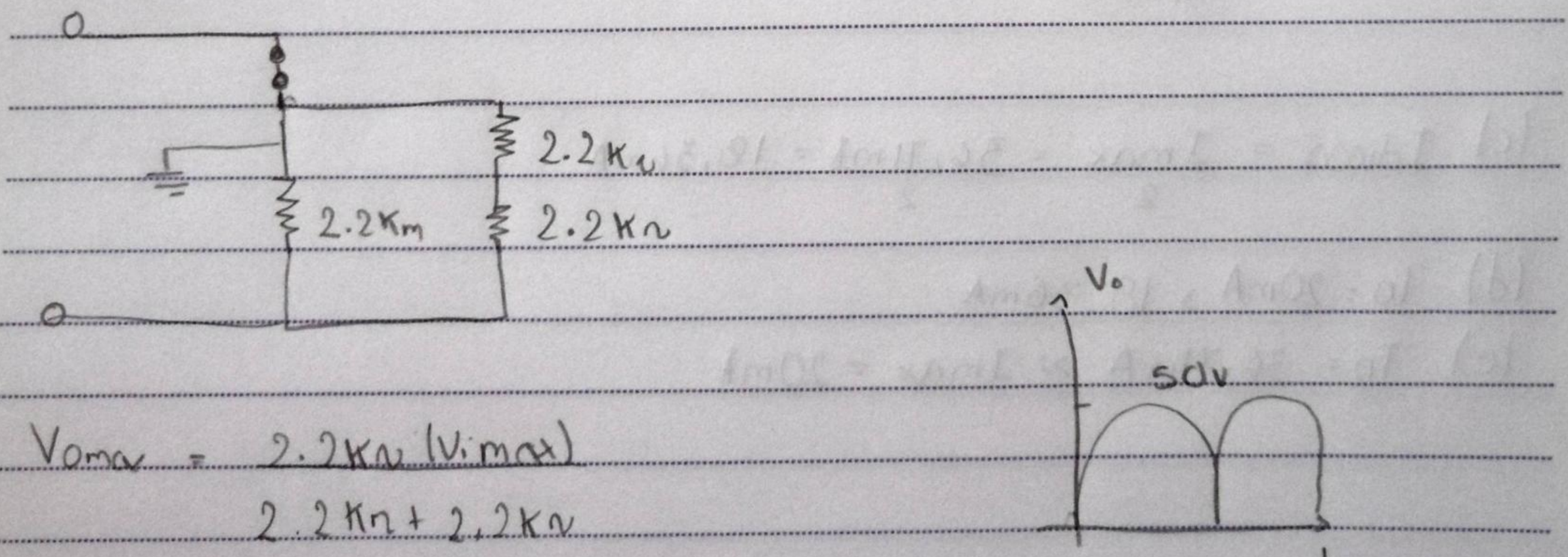
(e) $I_D = 36,71mA >> I_{max} = 20mA$

30. R%



$V_{o\,máx} = \frac{2.2K\Omega\,(V_{i\,max})}{2.2K\Omega + 2.2K\Omega}$

$= \frac{1}{2} V_{i\,máx} \Rightarrow \frac{1}{2}(100V) \Rightarrow 50V$



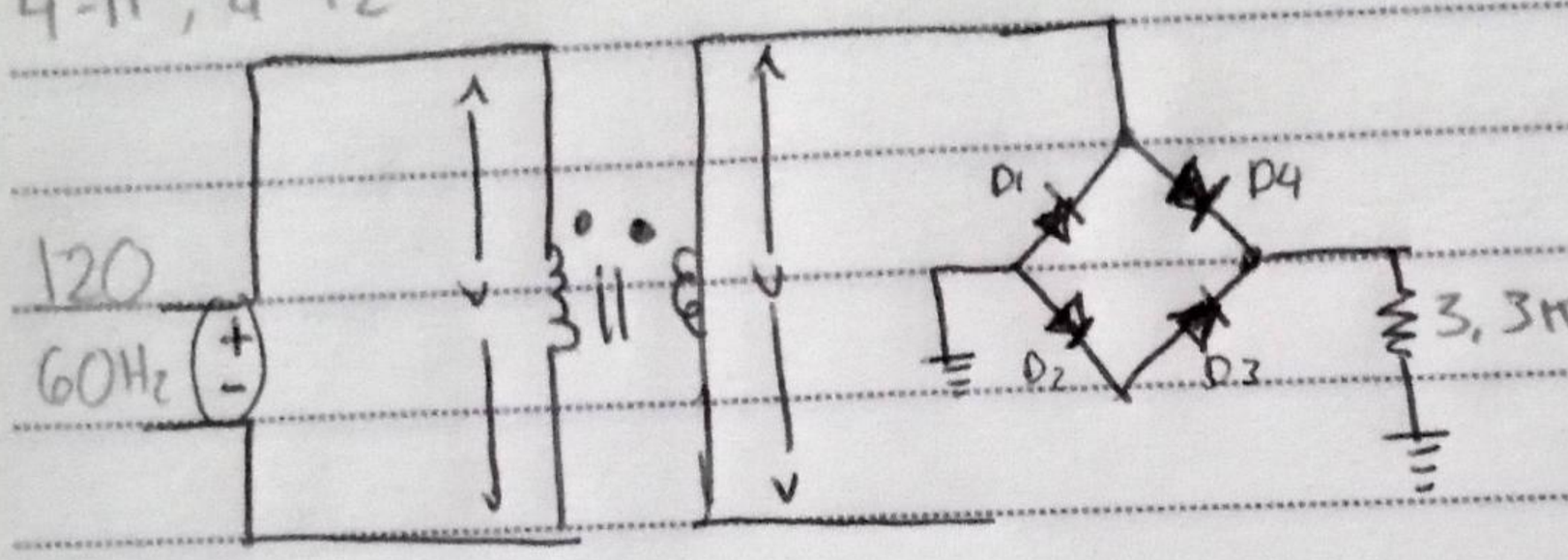
$V_{oma} = \frac{2.2K\Omega\,(V_{i\,max})}{2.2K\Omega + 2.2K\Omega}$

$\Rightarrow \frac{1}{2}(100v) = 50v$

$V_{dc} = 0,636 V_m = 0.636\,(50V)$

$= 31,8V$

4-11, 4-12



$V_2 = ?$ $\quad \frac{V_1}{V_2} = \frac{5}{1} \Rightarrow \frac{V_1}{5} \Rightarrow V_2 = \frac{120}{5}$

$V_2 = 24 V_{rms}$

$V_{CD} \frac{2V_p}{\pi}$ $\quad V_p = (24) \cdot \sqrt{2}$

$V_p = 24\sqrt{2}\, V_p$

$V_{CD} = \frac{2 \cdot 24\sqrt{2}}{\pi} = 21,60 V_{CD}$

$I_{CD} = \frac{V_{CD}}{R} = \frac{21,60}{3,3k} = 6,54 A$

Seg Aprox $\quad V_{ip2} = V_D - 1,4 = \boxed{24\sqrt{2}}$

$24\sqrt{2} - 1,4 = 32,54$

$V_{CD} = \frac{2 \cdot V_{p2}}{\pi} = \frac{2 \cdot 32,54}{\pi} = 20,71 V_{CD}$

$I_{CD} = \frac{V_{CD}}{3,3k} = \frac{20,71}{3,3K} = 6,27 mA$

4.12

Solo cambia V_2

$V_2 = \frac{120}{6} = 20 V_{rms}$

$V_p = 20\sqrt{2}\ V_p$

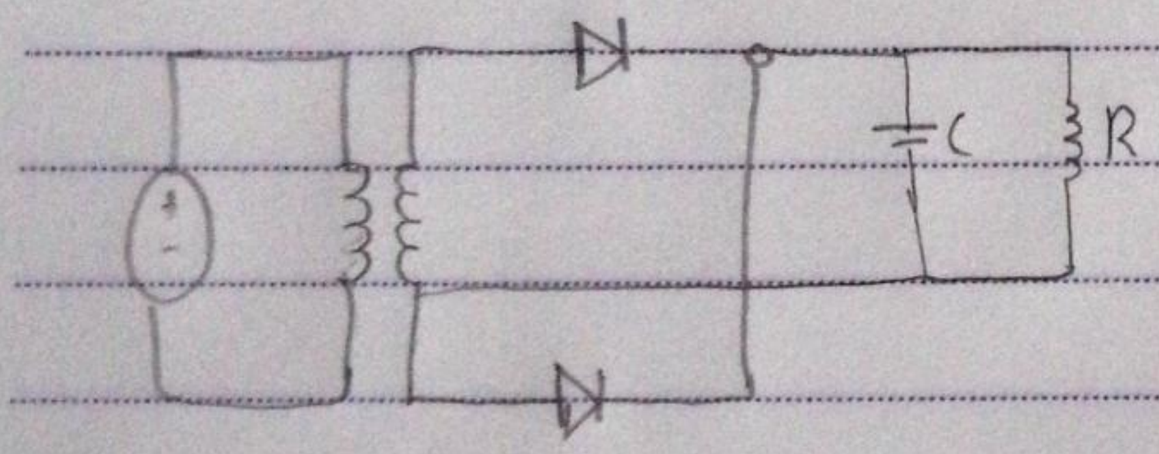
$V_{CD} = \frac{2 \cdot V_p}{\pi} = 18\ V_{CD}$ $I_{CD} = \frac{V_{CD}}{820} = 21,95\ mA$

2b aprox

$V_{p2} = 20\sqrt{2} - 1,4 = 26,88$

$V_{CD} = \frac{2V_{p2}}{\pi} = 17,11\ V_{CD}$ $I_{CD} = \frac{V_{CD}}{820} = 20,87\ mA$

4.23



$\Rightarrow r \Rightarrow 10\% \Rightarrow r = 100 \cdot \left(\frac{V_r}{V_{CD}}\right)$

$V_p = 48 V_{rms} \cdot \sqrt{2}$ como tiene 2 diodos

$V_p = 67,88\ V$ $V_{p2} = 0,5 V_p - 0,7$

$V_{p2} = 33,24\ V_p$

$V_{CD} = \frac{2V_{p2}}{\pi} = 21,16 V$

$I_{CD} = V_{CD}/330 = 64,12 mV$

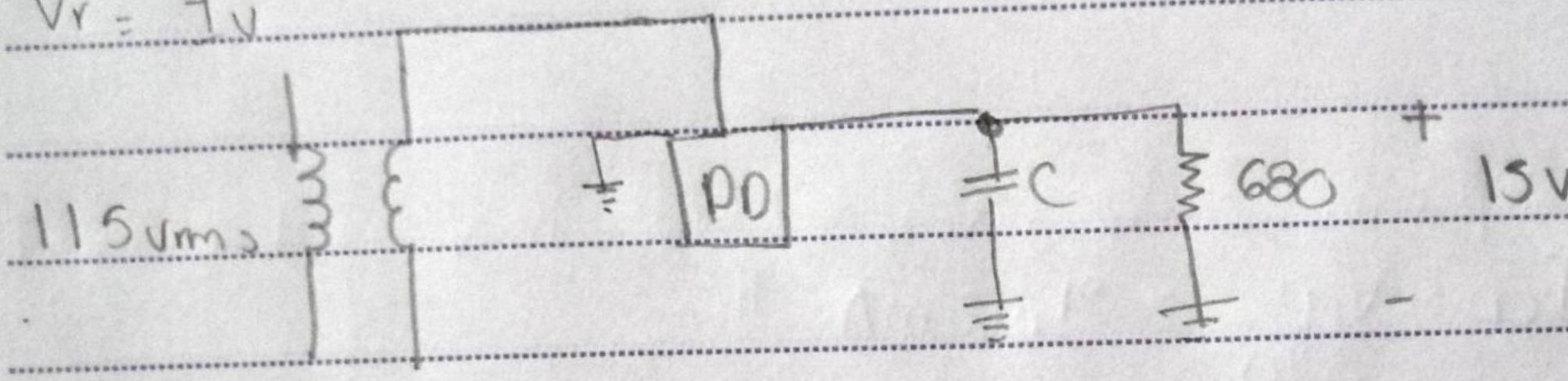
$C = \frac{I_{CD}}{2fV_r} = 252,5 \mu f$ $I_D = 0,5 I_{DC} = 32\ mA$

$V_{ID} = V_{p2} = 33,2\ V$

4.22

$V_{1x} = 15V$ $R = 680\Omega$

$V_r = 1V$



$V_{CD} = \frac{2V_p}{\pi}$

$\frac{\pi V_{CD}}{2} = V_p = 23,56\ V_p \rightarrow V_{rms}\ \frac{23,56}{\sqrt{2}} = 16,66V$

Apro ideal

$I_{CD} = V_{DC}/R = 22,05mA$

suponiendo $f = 60Hz$

$C = \frac{I_{CD}}{2fV_r} = 183,84\ F$

$I_D = 0,5 I_{DC} = 11,03mA$

$V_{iP} = V_p = 23,56V$