LAB - ANÁLISE DE CIRCUITOS

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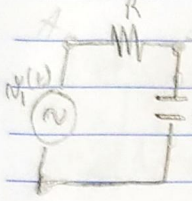


$v(t) = 3_0 \operatorname{SEN}(377t) \Rightarrow \omega = 377$ rad/s
$R = 330\ \Omega$
$C = 10\mu F$

$\omega = 2\pi f \Rightarrow f = \frac{377}{2\pi} \approx 60$ Hz

c)

MEDINDO NO CAPACITOR:

V_{PP}	T	V_{RMS}
3,6 V	16,64 μ	1,25 V

MEDINDO NO RESISTOR

V_{PP}	T	V_{RMS}
2,08 V	16,67 μ	0,74 V

MEDINDO NA FONTE

V_{PP}	T	V_{RMS}
5,68 V	16,67 μ	1,99 V

$V_{PP} = 5,68 - 3,6 = 2,08$ V

$V_{RMS} = 1,99 - 1,25 = 0,74$ V

TRANSFORMANDO $v(t)$ NA REPRESENTAÇÃO FASORIAL, TEMOS

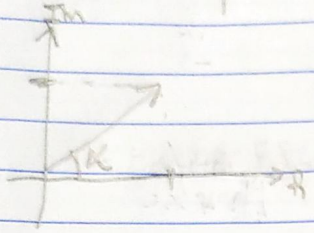
$v(t) = 3 \operatorname{SEN}(377t) = 3\cos(377t - 90°) \Rightarrow V(t) = 3\angle -90°$

OBTENDO A REATÂNCIA CAPACITIVA, TEMOS

$X_C = -\frac{1}{\omega C} j = \frac{-1}{377_0 \cdot 10\mu} j \approx -265,25j\ \Omega$

$R + X_C = 330 + 265,25j$

Para passar as cordenada polar



$$\alpha = tg^{-1}\left(\frac{co}{ca}\right) = tg^{-1}\left(\frac{265,25}{330}\right)$$

$\alpha = 38,79°$

$\boxed{38,79}$

achando a impiedancia

$\sqrt{330^2 + 265,25^2} = 423,39\,\Omega$

juntando

$Z = 423,39 \angle 38,79°$

$$\frac{V}{Z} = I = \frac{3\angle -90°}{423,39\angle 38,79°} = 7,08 \cdot 10^{-3} \angle -128,79°$$

$$\frac{3}{423,39} \angle -90 - 38,79$$

$V_{RMS} = \frac{I}{\sqrt{2}} = \frac{7,08}{\sqrt{2}} = 5,01\,mA$

Corrente experimental = $4,33 \cdot 10^{-3}\,A$

(a)

$5 \cdot \cos(3500t)$

$f = \frac{\omega}{2\pi} = \frac{3500}{2\pi} = 557,0423\,Hz$

Medindo no capacitor			Medindo no Resistor		
Vpp	T	VRMS	Vpp	T	VRMS
9,72V	1,79m	3,34V	7,808V	1,79m	2,746V

Medindo na fonte		
Vpp	T	VRMS
8,72V	1,79m	3,08V

$Vpp = 8,72 - 0,912 = 7,808\,V$

$V_{RMS} = 3,08 - 334 = 2,746\,V.$

(I) Transformando $v(t)$ em fasorial

$5 \angle 0$

(II) achando impedancia

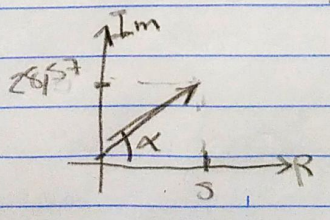
$Z = R + X_C =$

$X_C = \frac{(2\pi f_C)^{-1}}{\omega} = (\omega C) = (557,07 \cdot 10^{-6}) = 28,57\,j$

$Z = 330 - 28,57\,j$

$\sqrt{330^2 + 28,57^2} = 331,23$

$\alpha = tg^{-1}\left(\frac{28,57}{330}\right) = 4,95$



$331{,}23 \angle 4{,}95$

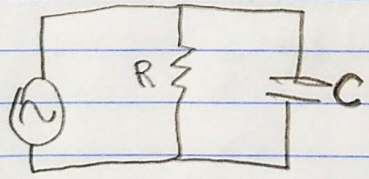
$$I = \frac{V}{Z}$$

$$I = \frac{5\angle 0}{331{,}23\angle 4{,}95} = \frac{5}{331{,}23}\angle 0 - 4{,}95 = 0{,}015\angle -4{,}95 \; \#$$

$$I_{RMS} = \frac{I}{\sqrt{2}} = \frac{0{,}015}{\sqrt{2}} = 0{,}10\,A$$

$I_{experimental} = 0{,}00882\,V.$

(c) $v(t) = 3\,sen(337t)$



$I_{exp} = 5{,}52\,mA$

Medindo no capacitor			Medindo no Resistor		
V_{pp}	T_P	V_{RMS}	V_{pp}	T_P	V_{RMS}
5,28 V	16,68 m	1,85 V	5,28 V	16,68 m	1,85 V