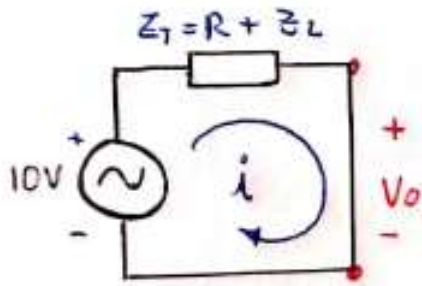


<i>Capacitor</i>							
<i>Frecuencia Hz</i>	<i>V_o Osciloscopio</i>	<i>V_o Multimetro</i>	<i>Voltaje Calculado</i>	<i>Corriente Total I</i>	<i>Corriente Calculado</i>	<i>Reactancia $XC \frac{V_o}{I}$</i>	<i>C_{eq} = 20_{μF}</i>
0	0	0	0	0	0	0	
10	10 V	7,04 V	0.000123L-179.99	0,01 A	0.099L0.000716	704	
50	8,32 V	6 V	0.000621L-179.99	0,03 A	0.099L0.00359	200	
100	6,12 V	4,38 V	0.00123L-179.99	0,05 A	0.099L0.00716	87,6	
500	1,33 V	1,10 V	0.00627L0.035	0,07 A	0.099L0.035	15,71	
1000	0,78 V	0,55 V	0.0124L-179.28	0,07 A	0.099L0.0719	7,85	

<i>Inductor</i>							
<i>Frecuencia Hz</i>	<i>V_o Osciloscopio</i>	<i>V_o Multimetro</i>	<i>Voltaje Calculado</i>	<i>Corriente Total I</i>	<i>Corriente Calculado</i>	<i>Reactancia $XL \frac{V_o}{I}$</i>	<i>I_{eq} = 50_{mH}</i>
0	0	0		0	0	0	
10	0,99 V	0,23 V	0.3138 ∠88.20° V	0,07 A	0.095 ∠-16.77° A	3,28	
50	1,54 V	1,11 V	1.55 ∠81.07° V	0,07 A	0.0987 ∠-8.92° A	15,85	
100	3,05 V	2,14 V	2.99 ∠72.56° V	0,06 A	0.0954 ∠-17.43° A	35,66	
500	8,4 V	5,97 V	8.435 ∠32.48° V	0,03 A	0.0684 ∠-51.79° A	199	
1000	9,6 V	6,73 V	9.528 ∠17.65° V	0,02 A	0.0303 ∠-72.34° A	336,5	

$\% \text{ Error} = \frac{\text{valor Calculado} - \text{valor medido}}{\text{valor Medido}} * 100$		
frecuencia	Voltaje	Corriente
0	0%	0%
10	25.8 %	12.57%
50	28.38%	13.1%
100	39.71%	14.9%
500	41.28	42.15%
1000	41.45%	51.5%



Impedancia del Inductor $Z_L = j \omega L_{eq}$

$$\omega = 2 \pi f$$

Impedancia Total $Z_T = R + Z_L$

FRECUENCIA = 10 Hz

$$Z_T = 100 + j2\pi(10)(0.05) = 100 + j3.14$$

$$i = \frac{V_p}{Z_T}$$

$$i = \frac{10}{100 + j3.14} = 0.095 \angle -16.77^\circ \text{ A}$$

$$V = \frac{V_p * Z_T}{R + Z_T}$$

$$V = \frac{10 * j3.14}{100 + j3.14} = 0.3138 \angle 88.20^\circ \text{ V}$$

FRECUENCIA = 50 Hz

$$Z_T = 100 + j2\pi(50)(0.05) = 100 + j15.70$$

$$i = \frac{V_p}{Z_T}$$

$$i = \frac{10}{100 + j15.70} = 0.0987 \angle -8.92^\circ \text{ A}$$

$$V = \frac{V_p * Z_T}{R + Z_T}$$

$$V = \frac{10 * j15.70}{100 + j15.70} = 1.55 \angle 81.07^\circ \text{ V}$$

FRECUENCIA = 100 Hz

$$Z_T = 100 + j2\pi(100)(0.05) = 100 + j31.41$$

$$i = \frac{V_p}{Z_T}$$

$$i = \frac{10}{100 + j31.41} = 0.0954 \angle -17.43^\circ \text{ A}$$

$$V = \frac{V_p * Z_T}{R + Z_T}$$

$$V = \frac{10 * j31.41}{100 + j31.41} = 2.99 \angle 72.56^\circ \text{ V}$$

FRECUENCIA = 500 Hz

$$Z_T = 100 + j2\pi(500)(0.05) = 100 + j157.07$$

$$i = \frac{V_p}{Z_T}$$

$$i = \frac{10}{100 + j157.07} = 0.0684 \angle -51.79^\circ \text{ A}$$

$$V = \frac{V_p * Z_T}{R + Z_T}$$

$$V = \frac{10 * j157.07}{100 + j157.07} = 8.435 \angle 32.48^\circ \text{ V}$$

FRECUENCIA = 1000 Hz

$$Z_T = 100 + j2\pi(1000)(0.05) = 100 + j314.15$$

$$i = \frac{V_p}{Z_T}$$

$$i = \frac{10}{100 + j314.15} = 0.0303 \angle -72.34^\circ \text{ A}$$

$$V = \frac{V_p * Z_T}{R + Z_T}$$

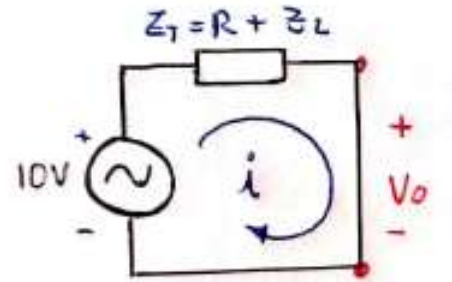
$$V = \frac{10 * j314.15}{100 + j314.15} = 9.528 \angle 17.65^\circ \text{ V}$$

$$\text{Impedancia del Capacitor} \quad Z_C = \frac{1}{j \omega C_{eq}}$$

$$\omega = 2 \pi f$$

$$\text{Impedancia Total } Z_T = R + Z_C$$

% Error = $\frac{\text{valor Calculado} - \text{valor medido}}{\text{valor Medido}} * 100$		
Frecuencia Hz	Voltaje Vo	Corriente
0	0%	0%
10	40,90 %	24 %
50	41%	76 %
100	42,009 %	56 %
500	42,72 %	40%
1000	43,63 %	25,31 %



FRECUENCIA = 10 Hz

$$Z_T = 100 + \frac{1}{j 2\pi(10)(0.00002)} = 100 + j795,77$$

$$i = \frac{V_p}{Z_T}$$

$$i = \frac{10}{100 + j795,77} = 0,0124 \angle - 82.83^\circ \text{ A}$$

$$V = \frac{V_p * Z_T}{R + Z_T}$$

$$V = \frac{10 * j795,77}{100 + j795,77} = 9.92 \angle 7.16^\circ$$

FRECUENCIA = 50 Hz

$$Z_T = 100 + \frac{1}{j 2\pi(50)(0.00002)} = 100 + j159,15$$

$$i = \frac{V_p}{Z_T}$$

$$i = \frac{10}{100 + j159,15} = 0.053 \angle -57.85^\circ \text{ A}$$

$$V = \frac{V_p * Z_T}{R + Z_T}$$

$$V = \frac{10 * j159,15}{100 + j159,15} = 8,46 \angle 32,14^\circ \text{ V}$$

FRECUENCIA = 100 Hz

$$Z_T = 100 + \frac{1}{j 2\pi(100)(0.00002)} = 100 - j79.57$$

$$i = \frac{V_p}{Z_T}$$

$$i = \frac{10}{100 - j79.57} = 0.078 \angle 38.50^\circ$$

$$V = \frac{V_p * Z_T}{R + Z_T}$$

$$V = \frac{10 * (-j79.57)}{100 - j79.57} = 6,22 \angle 51,49^\circ \text{ V}$$

FRECUENCIA = 500 Hz

$$Z_T = 100 + \frac{1}{j 2\pi(500)(0.00002)} = 100 - j15.91$$

$$i = \frac{V_p}{Z_T}$$

$$i = \frac{10}{100j15.91} = 0.099 \angle -4.54 \text{ A}$$

$$V = \frac{V_p * Z_T}{R + Z_T}$$

$$V = \frac{10 * j15.91}{100 + j15.91} = 1.57 \angle 80.95 \text{ V}$$

FRECUENCIA = 1000 Hz

$$Z_T = 100 + \frac{1}{j 2\pi(1000)(0.00002)} = 100 - j7.95$$

$$i = \frac{V_p}{Z_T}$$

$$i = \frac{10}{100j7.95} = 0.099 + 0.007 \text{ A}$$

$$V = \frac{V_p * Z_T}{R + Z_T}$$

$$V = \frac{10 * j7.95}{100 + j7.95} = 0.79 \angle 85.45 \text{ V}$$