Konuralp BOL 22011618 Kar.

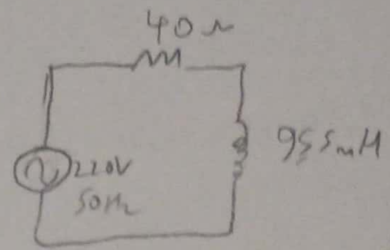
soru 1 Hesaplama

a) empedans

$Z = \sqrt{R^2 + (2\pi f L)^2} = \sqrt{40^2 + (2\pi . 50 . 95,5 . 10^{-3})^2} = 50$

b) Paketten değer olan

$i_L = \frac{V}{Z} = \frac{220}{50} \cong 4,4A$



c) V_L ve V_R

Seri olduğundan $i_L = i_R = 4,4A$,

$V_L = i_L . X_L$

$X_L = 2\pi f L = 2\pi . 50 . 95,5 . 10^{-3} = 30$

$V_L = 4,4 . 30 = 132V$

$V_R = i_R . R = 4,4 . 40 = 176V$

d) faz açısı

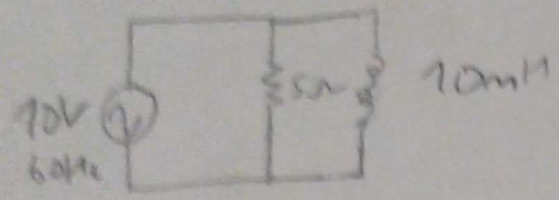
$\alpha = \arctan\left(\frac{2\pi f L}{R}\right) = \arctan \frac{30}{40} \cong 36.87°$

a	b	c	d
50	4,4A	$V_L = 132V$ $V_R = 176V$	36.87

Ölçümler

a	b	c	d
X	4,4A	$V_L = 132V$ $V_R = 176V$	X

Soru 2



a) $I_R = \frac{V}{R} = \frac{10}{5} = 2A$

b) $I_L = \frac{V}{X_L}$, $X_L = 2\pi FL = 2\pi \cdot 60 \cdot 10 \cdot 10^{-3} \simeq 3,78$

$I_L = \frac{10}{3,78} \simeq 2,65\ A$

a	b	c	d	e
2A	2,65	3,32	3	52,96

c) $I = \sqrt{I_R^2 + I_L^2} \simeq 3,32A$

d) $Z = \frac{V}{I} = \frac{10}{3,32} \simeq 3$

e) $\alpha = \arctan\left(\frac{2,65}{2}\right) \simeq 52,96°$

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