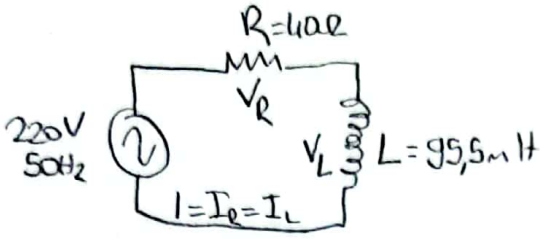
Adı Melih Soyadı Yelman No: 21011702 İmza:

Hesaplar

1-



$X_L = 2\pi fL = 2.\pi.50Hz.95,5mH = 30\Omega$

$Z = \sqrt{R^2+X_L^2} = \sqrt{40^2+30^2} = 50\Omega$

$I_L = \frac{V}{Z} = \frac{220V}{50\Omega} = 4,4A$

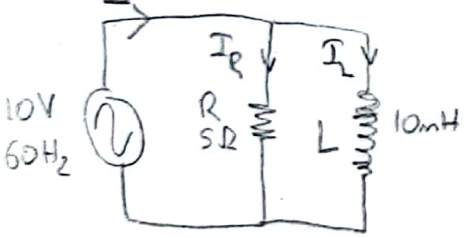
$V_R = I.R = 4,4.40\Omega = 176V$

$V_L = I.X_L = 4,4A.30\Omega = 132V$

$\theta = \tan^{-1}(\frac{X_L}{R}) = \tan^{-1}(\frac{30}{40}) = 36.9°$

Akım gerilimden sonra gelir, θ negatif.

2- I



$X_L = 2\pi fL = 2\pi.60Hz.10mH = 3.77\Omega$

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

$I_L = \frac{V}{X_L} = \frac{10V}{3.77\Omega} = 2.65A$

$I = \sqrt{I_R^2+I_L^2} = \sqrt{2^2+2.65^2} = 3.3A$

$Z = \frac{V}{I} = \frac{10V}{3.3A} \simeq 3\Omega$

$\theta = \tan^{-1}(\frac{I_L}{I_R}) = \tan^{-1}(\frac{2.65}{2}) \simeq 53°$

Gerilim akımdan önce gelir, θ pozitif.

Ölçümler

Soru 1	A	B	C	D
Hesaplanan	50Ω	4,4A	176V / 132V	36,9°
Ölçüm	?	4,41A	176V / 132V	?

Soru 2	A	B	C	D	E
Hesaplanan	2A	2,65A	3,3A	3Ω	53°
Ölçüm	1,98A	2,62A	3,3A	?	?