Nama : Ahmad Zulfadli

NIM : 1195051159 8

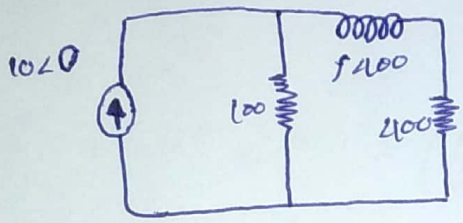
Kelas : III-E

Matkul : Rangkaian Listrik.

UAS.

---

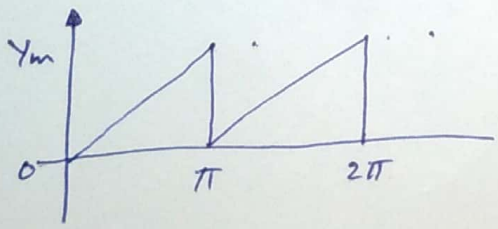
(1) Dik : Rangkaian RLC berikut.



Dit :

a. Hitunglah daya rata-rata (P)
b. Hitunglah daya reaktif (Q)
c. Hitunglah daya komplek (S)

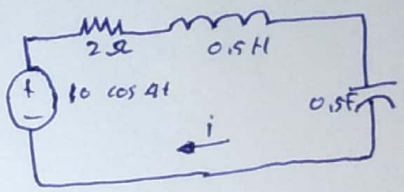
(2) Dik : bentuk gelombang seperti gambar berikut



Dit : jika $V_m = 10$ V. maka hitunglah

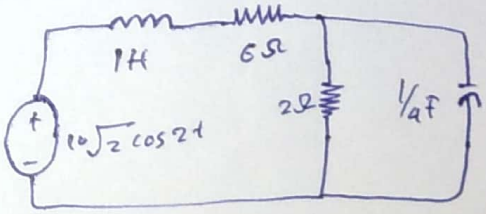
a. nilai tegangan rata-rata.
b. nilai tegangan efektif.

(3) Dik : rangkaian RLC berikut.



Dit : hitung persamaan arus i(t)

(4) Dik : rangkaian RLC berikut.



Dit :

a. hitung daya komplek (S)
b. hitung daya reaktif (Q)

Jawab :

① $Z_p = \frac{(400 + j400) \cdot 100}{(400 + j400) + 100} = \frac{565,6 \angle 45^\circ \cdot 100}{640,3 \angle 28,65^\circ}$

$= \frac{56560 \angle 45^\circ}{640,3 \angle 32,65}$

$= 88,33 \angle 6,35^\circ$

$= 87,8 + i\ 9,76$

$P = I_{eff}^2 R = \left(\frac{10}{\sqrt{2}}\right)^2 . 87,8$

$= \frac{100}{2} . 87,8$

$= 4390\ W.$

Q. $I_{eff}^2 . X_0 = \left(\frac{10}{\sqrt{2}}\right)^2 . 9,76$

$= 488\ W$

S. $I_{eff}^2 . Z = \left(\frac{10}{\sqrt{2}}\right)^2 . 88,33$

$= \frac{100}{2} . 88,33$

$= 4.416,5\ W.$

②

a. $V_t = \frac{2 . V_m}{\pi}$

$= 0,637 . 10$

$= 6,37\ V$

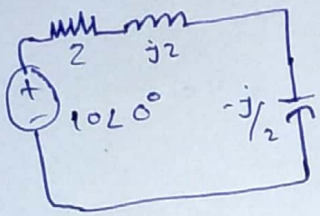
b. $V_{ef} = 0,707 . V_m$

$= 0,707 . 10$

$= 7,07\ V.$

~~(3) I = 10~~

(3) Ranah phasor :



$$I = \frac{10\angle 0^\circ}{2 + j2 - j/2} = \frac{10\angle 0^\circ}{2 + j3/2} \cdot \frac{10\angle 0^\circ}{25\angle 36,9^\circ}$$

$$I = 4 \angle -36,9^\circ$$

maka, $i = 4\cos(4t - 36,9^\circ)$ A.

(4)