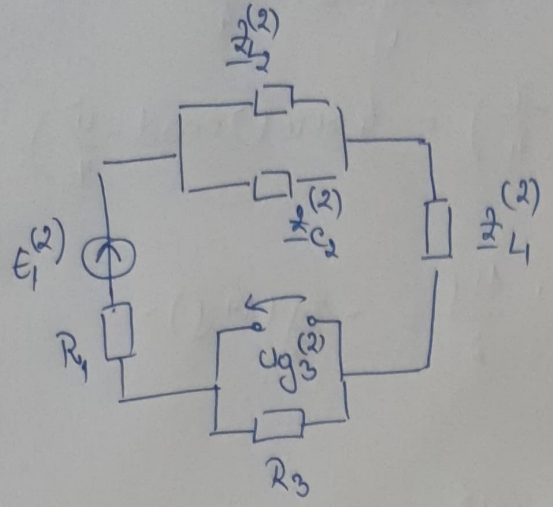
3) Pentru armonica 2

$u_1^{(2)}(t)$, $u_{g_3}^{(t)}$, $P^{(2)}$, $Q^{(2)}$

$\omega = 2000$ rad/s.



$\underline{\mathcal{E}}_2^{(2)} = -6j$

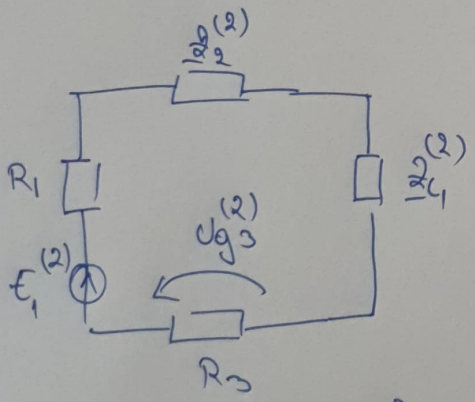
$\underline{Z}_{L_1}^{(2)} = \underline{Z}_{L_2}^{(2)} = j\omega L_1 =$

$= j \cdot 2000 \cdot 2 \cdot 10^{-3} = 4j$

$\underline{Z}_{C_2}^{(2)} = \dfrac{-j}{\omega C_2} = \dfrac{-j}{2000 \cdot 10^{-3} \cdot 0{,}25} =$

$= \dfrac{-1}{0{,}5} j = -2j.$

$\underline{Z}_2^{(2)} = \dfrac{\underline{Z}_{L_2}^{(2)} \cdot \underline{Z}_{C_2}^{(2)}}{\underline{Z}_{L_2}^{(2)} + \underline{Z}_{C_2}^{(2)}} = \dfrac{4j \cdot (-2j)}{4j - 2j} = \dfrac{-4j \cdot 2j}{2j} = -4j.$



$\underline{I}_1^{(2)} = \dfrac{\underline{\mathcal{E}}_1^{(2)}}{\underline{Z}_2^{(2)} + \underline{Z}_{L_1}^{(2)} + R_1 + R_3} =$

$= \dfrac{-6j}{-4j - 2j + 6} = \dfrac{+6j}{-6(j-1)} =$

$= \dfrac{j(j+1)}{j^2 - 1} = \dfrac{j^2 + j}{-2} = \dfrac{1-j}{2}.$

$\left|\underline{I}_1^{(2)}\right| = \sqrt{\frac{1}{4} + \frac{1}{4}} = \frac{1}{2} \cdot \sqrt{2} = \frac{\sqrt{2}}{2}$, $\varphi_{I_1}^{(2)} = \operatorname{arctg}\dfrac{-\frac{1}{2}}{\frac{1}{2}} = \operatorname{arctg}(-1) = -\dfrac{\pi}{4}.$

$i_1^{(2)}(t) = \dfrac{\sqrt{2}}{2} \cdot \sqrt{2} \cdot \sin\left(2000t - \dfrac{\pi}{4}\right) = \sin\left(2000t - \dfrac{\pi}{4}\right)$

$u_{g_3}^{(2)}(t) = R_3 \cdot I_1^{(2)} = 4 \cdot \dfrac{1-j}{2} = 2(1-j)$

$$\underline{U}_{g3}^{(2)} = 2 - 2j$$

$$|\underline{U}_{g3}^{(2)}| = \sqrt{4+4} = 2\sqrt{2}, \quad \varphi_{U_3}^{(2)} = \operatorname{arctg}(-1) = -\frac{\pi}{4}.$$

$$u_{g3}^{(2)}(t) = 2\sqrt{2}\cdot\sqrt{2}\sin\left(2000t - \frac{\pi}{4}\right) = 4\sin\left(2000t - \frac{\pi}{4}\right).$$

$$\underline{S}^{(2)} = \underline{E}_1^{(2)} \cdot \underline{I}_1^{(2)*} = -6j \cdot \frac{1+j}{2} = -3j(1+j) =$$

$$= -3j + 3 = 3 - 3j.$$

$$P^{(2)} = 3\,W, \quad Q^{(2)} = -3\,VAR.$$