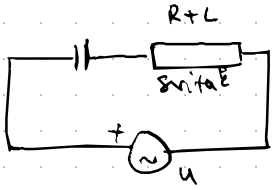
7. FREKVENCIJSKE KARAKTERISTIKE EL. KRUGOVA I REZONANCIJA

1.



u_c

I u fazi s naponom izvora

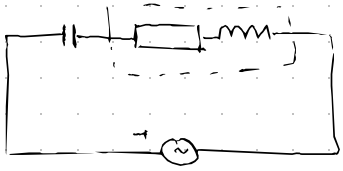
$u_s = ?$

$U = 120\,V$

$U_c = 160\,V$

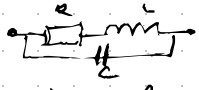
EL. on the IGE

↳ IV. kvadrant

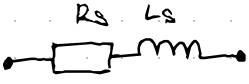


*svitak: zavojnica - ima neki R

· zbog blizine zavoja postoji kapacitet između zavoja i sloja:

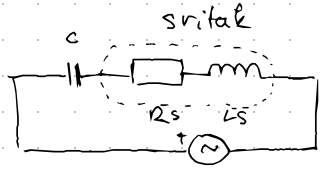


→ koristimo shemu

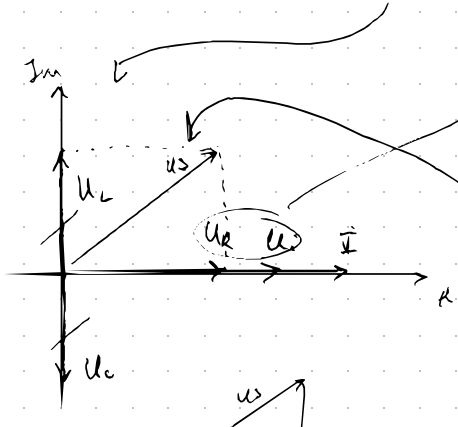


nadomjesna shema

za opis svitka na nižim frekvencijama zanemarujemo kapacitet



- kada na svitak spojimo +t (C), serijski RLC krug ima rezonantnu frek.

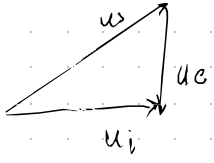


$u_R = u_i$

$u_R = 120\,V$

$u_s = u_R + u_L$

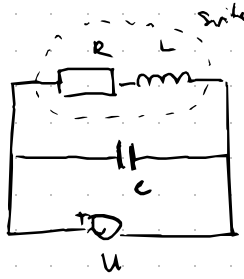
$u_L = X_L \cdot I$



$u_s = \sqrt{u_c^2 + u_i^2}$

$u_s = 200\,V$

2.



$L = 1\,mH \quad = \omega L$

$R = 7\,\Omega$

$C = 20\,\mu F = \frac{1}{\omega C}$

$f_r = ?$

$\omega C = \frac{1}{\omega L}$

$\omega^2 = \frac{1}{CL}$

Paralela RLC

$$|Y(\omega)| = \sqrt{\left(\frac{1}{R}\right)^2 + \left(\omega C - \frac{1}{\omega L}\right)^2} \rightarrow |Z(\omega)| = \sqrt{\underbrace{R^2}_{R_c} + \underbrace{\left(\omega L - \frac{1}{\omega C}\right)^2}_{Im}}$$

$Z =$

$Z =$