B I.) $f_0 = \frac{1}{2\pi\sqrt{L'C'}} = 3393\,Hz$ $\quad L' = \bar{L} = 100{,}2\,mH \quad C' = \bar{C} = 22{,}00\,nF \quad N = 121 \Rightarrow$ CKT meist norm. ele.

$\Delta C = \frac{\sigma_C}{\sqrt{N}} \cdot \underbrace{z_{0{,}005}}_{2{,}58} = 0{,}5207\,nF \qquad \Delta L = \frac{\sigma_L}{\sqrt{N}} z_{0{,}005} = 0{,}2855\,mH$

$P[L' - \Delta L < L < L' + \Delta L] = 99\% \Rightarrow \quad P[99{,}71\,mH < L < 100{,}29\,mH] = 99\%$ (3)

$P[C' - \Delta C < C < C' + \Delta C] = 99\% \Rightarrow \quad P[21{,}48\,nF < C < 22{,}52\,nF] = 99\%$

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$c_C = \frac{\partial f_0}{\partial C} = -\frac{1}{4\pi} \cdot L^{-\frac{1}{2}} C^{-\frac{3}{2}} = -7{,}72 \cdot 10^{10}\, H^{-\frac{1}{2}} F^{-\frac{3}{2}} \qquad c_L = \frac{\partial f_0}{\partial L} = -\frac{1}{4\pi} C^{-\frac{1}{2}} L^{-\frac{3}{2}} = 1{,}697 \cdot 10^{4}\, H^{-\frac{3}{2}} \cdot F^{-\frac{1}{2}}$ (2)

$\sigma_{f_0} = \sqrt{c_C^2 \sigma_C^2 + c_L^2 \sigma_L^2}\, \frac{1}{\sqrt{N}} = 15{,}68\,Hz \qquad \Delta f_0 = \sigma_{f_0} \cdot z_{0{,}005} = 40{,}45\,Hz \qquad P[3353\,Hz < f_0 < 3433\,Hz] = 99\%$

B II.) $\frac{R_x + j\omega L_x}{R_3} = R_2 Y_4 = R_2\left(\frac{1}{R_4} + j\omega C_4\right)$ (1)

$R_x = \frac{R_2 R_3}{R_4} = 0{,}4\,\Omega$

$L_x = R_2 R_3 C_4 = 2{,}5\,mH$ (1)

$\frac{1}{R_p} + \frac{1}{j\omega L_p} = \frac{1}{Z_x} = \frac{1}{R_x + j\omega L_x} = \frac{R_x - j\omega L_x}{R_x^2 + \omega^2 L_x^2}$

$R_p = \frac{R_x^2 + \omega^2 L_x^2}{R_x} = 16{,}02\,\Omega$

$L_p = \frac{R_x^2 + \omega^2 L_x^2}{\omega^2 L_x} = 2{,}564\,mH$ (2)

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$D = \frac{R_x}{\omega L_x} = 0{,}16$ (1)