task_uzbbnoz8abe6201d_with_calculation

Student Group

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Table of Contents

Exercise E1 Impedances at Frequencies (written test, approx. 14 % of a 60-minute written test, SS2023) 2

exam ee1 SS2023

Exercise E1 Impedances at Frequencies
(written test, approx. 14 % of a 60-minute written test, SS2023)

[illegible] with $C_2 = 502 ~\rm nF$ [illegible] $L_2 = 6.8 ~\rm V$ [illegible] the

Result [illegible] a capacitor with $C_3 = 5.6 ~\rm nF$.

1. An inductor with $X_{L1} = 60 ~\rm m\Omega$ and $L_1 = 15.9 ~\rm \mu H$.

Solution

Solution

\begin{align*} f_ [illegible] ~\rm kHz} \end{align*}

kHz}\end{align*}

\begin{align*} X_{C3} &= [illegible] \cdot C_2 [illegible] f_2

\begin{align*} X_{L1} &= \omega_1 \cdot L = 2\pi f_1 \cdot L_1 \\ \rightarrow f_1 &= [illegible]

{{X_{L1}}\over{2\pi \cdot L_1}} \\ &= {{60 ~\rm m\Omega}\over{2\pi \cdot 15.9 ~\rm \mu H}} \\ &= {{60 \cdot 10^{-3}}\over{2\pi \cdot 15.9 \cdot 10^{-6}}} \rm [illegible]

{{{V}\over{A}}}\over{{Vs}\over{A}}}} \\ \end{align*}

\cdot A/Vs}} } \\ \end{align*}