№5

$u(t) = 100 \cdot \sin(100t + 20°)$ [В]

$i(t) = 250 \cdot \sin(100t + \frac{11\pi}{18})$ [мА]

$\underline{U}_m = 100 \cdot e^{20°i} = 100 \cdot e^{\frac{\pi}{9}i}$

$\underline{I}_m = 250 \cdot e^{\frac{11\pi}{18}i}$

$\underline{S}_n = \frac{\underline{U}_m \cdot \underline{I}_m^*}{2} = \frac{100 \cdot 250}{2} \cdot e^{(\frac{\pi}{9} - \frac{11\pi}{18})i} =$

$= 12500 \cdot e^{-\frac{\pi}{2}i} = -12500\,i$ ВАр

№3

$P_{макс} = 750$ [Вт] $R_1 = 6$ [Ом]

$R = 30$ [Ом] $R_2 = 15$ [Ом]

$r = 30$ [Ом]

$P_{ист} = I^2 \cdot r = \frac{E^2 \cdot r}{(R+r)^2} = 750$ [Вт]

$\frac{E^2 \cdot 30}{(30+30)^2} = 750$

$E = 300$ [В]

$I = \frac{E}{R+r}$

$I_1 = \frac{300}{45} = 6{,}667$ $I_2 = \frac{300}{36} = 8{,}333$

$U_1 = \frac{750}{6{,}667} = 112{,}494$ [В] $U_2 = \frac{750}{8{,}333} = 90{,}004$ [В]

Ответ: ~~[-112,494 ; 90,004]~~ [В]

[90,004 ; 112,494] [В]

№4

$\underline{y} = 3 - j4$ ~~[мСм]~~ $= \frac{3-j4}{1000}$ [См]

$\underline{z} = \frac{1}{\underline{y}} = \frac{1000}{3-4j} = 120 + 160i$ [Ом]

Ответ: 160 [Ом]

№7

$\rho = X_{L0} = X_{C0} = \omega_0 L = \frac{\rho}{\omega_0 C} = \sqrt{\frac{L}{C}}$

$R_1 = 15$ [Ом] $\quad L = 2.5$ [мГн]

$C = 40$ [мкФ]

$\rho = \pm 25$

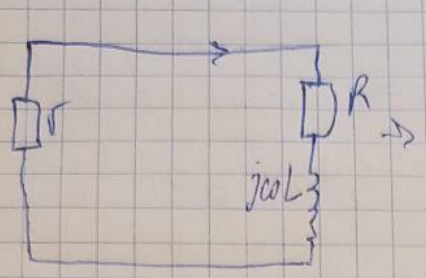
$\begin{cases} R_1 < \rho \\ R_2 < \rho \end{cases}$ $\quad \begin{cases} R_1 > \rho \\ R_2 > \rho \end{cases}$

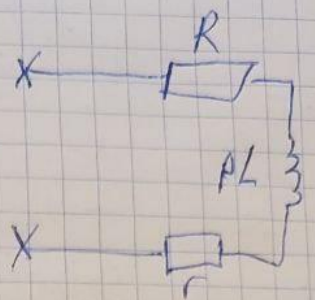
$\begin{cases} 15 < \sqrt{\frac{25 \cdot 10^{-3}}{40 \cdot 10^{-6}}} \\ R_2 < \sqrt{\frac{25 \cdot 10^{-3}}{40 \cdot 10^{-6}}} \end{cases}$ $\quad \begin{cases} 15 > \sqrt{\frac{25 \cdot 10^{-3}}{40 \cdot 10^{-6}}} \\ R_2 > \sqrt{\frac{25 \cdot 10^{-3}}{40 \cdot 10^{-6}}} \end{cases}$

$0 < R_2 < 25$ [Ом] $\quad R_2 = \emptyset$

Ответ: $0 \leq R_2 < 25$ [Ом]

№10





$$\dot{Z} = R + pL + r$$

$$R + pL + r = 0$$

$$p = -\frac{R+r}{L} = -\frac{20+10}{90 \cdot 10^{-3}} = -\frac{1000}{3}\ \frac{1}{c}$$

$$T = 3\tau = 3 \cdot \left|\frac{1}{p}\right| = 3 \cdot \left|-\frac{3}{1000}\right| = 3 \cdot \frac{3}{1000} = 0{,}009\ мс$$

Ответ: 0,009 мс