E i Y

$\dot{z} = \frac{100+j200}{4+j2} = \frac{50+j100}{2+j} = \frac{200+j150}{4+1}$ 172

$(50+j100)(2-j) = 100 - 50j + 200j + 100 = 250 + j150$ 46

$\dot{z} = \frac{\quad}{\quad} = 40+j30$

$Y = \frac{1}{40+j30} = \frac{40-j30}{1600+900} = \frac{40-j30}{2500} = \frac{4-j3}{250} = 0.016 - j0.012$

$P_a = VI = (100+j200)(4+j2) =$

$P = (100+j200)(4-j2) = 400 - j200 + j800 - j^2400$

$P = 400 + j600 + 400 = 800 + j600$

$P = 800$

$P_r = 600$

$P_a = \sqrt{640000 + 360000}$

$P_a = 10^2\sqrt{64+36} = 10^2\sqrt{100} = 10^3$

$\cos\theta = \frac{800}{1000} = 0.8$ $\tan\theta = \frac{6}{8} = \frac{3}{4}$

$\frac{1}{R} = \frac{1}{\frac{1}{j\omega C}} + \frac{1}{\frac{1}{j\omega C}}$

$\frac{1}{R} = j\omega C + \frac{d}{j\omega C}$

$\frac{1}{R} = 2j\omega C$

$R = \frac{1}{2j\omega C}$

$2\omega L - \frac{1}{2\omega C} = 0$ b. $\frac{1}{\sqrt{LC}}$ b, c, d, a

$2\omega L = \frac{1}{2\omega C}$ d: $\frac{1}{\sqrt{4LC}}$

$\omega^2 = \frac{1}{4LC}$ $\frac{1}{R} = \frac{2}{j\omega L} + \frac{1}{j\omega L}$ $C = \frac{1}{\sqrt{2LC}}$

$\omega = \frac{1}{2\sqrt{LC}}$ $R = \frac{j\omega L}{2}$

a:

$\omega L - 2\frac{1}{j\omega C} + \frac{j\omega L}{2} = 0$

$\omega^2\left(L + \frac{L}{2}\right) = \frac{2}{C}$

$\omega = \frac{2}{\quad}$

4) $|I_R| = I_L = I_C = 10$

$L = 0.02$

$C = 8 \times 10^{-4}$

$$\omega = \frac{1}{\sqrt{16 \times 10^{-6}}} = \frac{10^3}{4} = 250$$

R: ? I_R.

$$I_L = \frac{U}{j\omega L} = \frac{U}{\omega L} = \frac{U}{250 \times 0{,}2} = \frac{U}{5}$$

$4 I_R = I_L$

$4 I_R = \frac{E}{5} = 10$

$E = 50$

$\frac{U}{\omega L} = 10$

$U = 10 \times 250 \times 0{,}02$

$U = 50$

$4 I_5 = 10$

$4 \frac{50}{R} = 10$

$R = 20$

$$\dot{G} = \frac{R}{2j\omega L + R} = \frac{R(R - j2\omega L)}{R^2 + (2\omega L)^2} = \frac{R^2 - j2R\omega L}{R^2 + 4(\omega L)^2}$$

$$g = \frac{R^2}{R^2 + 4(\omega L)^2} \qquad \omega = 0$$

$g = 1$

$$R = \frac{G}{G^2 + B^2}$$

$\omega_c = 10^4$, R: ? $L = 0.02$

$$R = \frac{\frac{R^2}{R^2 + 4(\omega L)^2}}{\frac{R^4 + 4(R\omega L)^2}{(R^2 + 4(\omega L)^2)^2}}$$

$\omega = \frac{1}{\sqrt{LC}}$

$\omega L = 10^4 \times 0.02 = 200$

$$R = \frac{R^2}{\frac{R^2(R^2 - 4(\omega L)^2)}{(R^2 + 4(\omega L)^2)}}$$

$$R = \frac{R^2 + 4(\omega L)^2}{R^2 - 4(\omega L)^2} = \frac{R^2 + 16\times10^4}{R^2 - 16\times10^4}$$

$$R^3 - 16\times10^4 R = R^2 + 16\times10^4$$

$$2\omega L = \frac{1}{\omega C} \qquad \omega = \frac{1}{\sqrt{2LC}}$$

$$\omega L = \frac{1}{\omega C} \qquad \omega = \frac{1}{\sqrt{LC}}$$

$$\frac{\omega_2}{\omega_1} = \frac{1}{\sqrt{2}}$$

$$\angle G\omega = -\angle\beta$$

$$200\left(\frac{R^2}{R^2 + 4(200)^2}\right) = -R\frac{R^2}{R^2}$$

$$200R^2 = -R_1R^2$$

$$R = 2\omega L \qquad \omega L \qquad 2\omega L = 0$$

$$R = -\frac{2\omega LG}{B}$$

$$f = \frac{10000\pi}{2\pi} = 500$$

$$50\angle 60 \qquad \pi - \frac{\pi}{6}$$

$$\frac{90026}{20\ \ 15}$$

$$100\angle \qquad +$$

$$R_2 = 2R$$

$$\frac{1}{2} = \frac{1}{2R} + j\omega C$$

$$\frac{1}{2} = \frac{j2R\omega C + 1}{2R}$$

$$Z_1 = \frac{2R}{j2R\omega C + 1}$$

$$Z_1 = R_1$$

$$\frac{1}{Z_3} = \frac{1}{R_3} + j\omega C$$

$$\frac{1}{Z_3} = \frac{jR_3\omega C + 1}{R_3}$$

$$Z_3 = \frac{R_3}{jR_3\omega C_3 + 1}$$

$$Z_4 = \frac{R_4}{jR_4\omega C_4 + 1}$$

$$Z_2 = R + j\omega L$$

$$Z_2 = R + j\omega L + \frac{2R}{j2R\omega C + 1}$$

$$Z = R + j\omega L + \frac{2R - j4R^2\omega C}{4R^2\omega^2C^2 + 1} = \frac{1}{Z_{eq}}$$

$$Z = \frac{4R}{4R^2\omega^2C^2 + 1}$$

$$R + j\omega L$$

$$\frac{R_1}{\frac{R_3}{jR_3\omega C_3 + 1}} = \frac{R_2}{\frac{R_4}{jR_4\omega C_4 + 1}}$$

$$R_1(jR_3\omega C_3 + 1)R_4 = R_2(jR_4\omega C_4 + 1)R_3$$

$$j10R_3\omega C_3 \times 40 + 400 = j20 \times R_3 \times \omega \times 40 \times 4\times10^{-5} + 20R_3$$

$$R_3 = 20$$

$$10\times20\times C_3\times40 = 20\times20\times40\times4\times10^{-5}$$

$$C_3 = 2\times4\times10^{-5} = 8\times10^{-5}$$

4 $\frac{V}{R} = \frac{V}{\omega L}$

$\frac{4}{R} = \frac{1}{2\pi \cdot 0.02}$

$\frac{4}{R} = \frac{1}{5}$

$R = 20$

$I_R = \frac{\sqrt{V^2}}{R^2}$ ω. L, C

R = Ω.

$i = 10 + 10t + \frac{10}{q}$ ω =

$6 = \omega_0 CR = 6 \; 25\pi \times 8 \times 10^{-3} \times R$

$q = 200^{4} \; 0.2 \times R$