

$$\textcircled{10} \text{ a) } V = \frac{380\sqrt{2}}{\sqrt{2}} \angle 40^\circ$$

$$I = \frac{7,5\sqrt{2}}{\sqrt{2}} \angle 0^\circ$$

$$S = 380 \cdot 7,5 = 2850$$

$$S = 2850 \angle 40^\circ \text{ VA}$$

$$FP = \cos(40^\circ) = 0,77$$

$$P = |S| \cos 40^\circ$$

$$P = 2850 \cdot 0,77$$

$$P = 2.199,5 \text{ W}$$

$$\text{b) } V = \frac{220}{\sqrt{2}} \angle -30^\circ$$

$$I = \frac{8}{\sqrt{2}} \angle -60^\circ$$

$$S = \frac{220}{\sqrt{2}} \cdot \frac{8}{\sqrt{2}} \angle -30^\circ - (-60^\circ)$$

$$S = 880 \angle 30^\circ \text{ VA}$$

$$FP = \cos(30^\circ) = 0,87$$

$$P = |S| \cos 30^\circ \rightarrow P = 880 \cdot 0,87 \rightarrow P = 765,6 \text{ W}$$

$$\textcircled{20} \quad V = \frac{250}{\sqrt{2}} \angle 40^\circ$$

$$I = \frac{8,5}{\sqrt{2}} \angle 80^\circ$$

$$S = \frac{250}{\sqrt{2}} \cdot \frac{8,5}{\sqrt{2}} \angle 40^\circ - 80^\circ$$

$$S = 1.062,5 \angle -40^\circ \text{ VA}$$

$$P = |S| \cdot \cos(-40^\circ)$$

$$P = 1.062,5 \cdot 0,77$$

$$P = 833,9 \text{ W}$$

$$\textcircled{3^o} \quad \alpha_t = \cos^{-1}(0,9) = 25,84^\circ$$

$$\rho = \cos^{-1}(0,6) = 53,13^\circ$$

$$P_c = 5 \text{ KW} - [t_y(53,13^\circ - t_y(25,84^\circ))] = 4,25 \text{ KVAR}$$

$$C = \frac{4,25 \text{ KVAR}}{2\pi \cdot 60 \text{ Hz} \cdot (220 \text{ V})^2} \rightarrow$$

$$C = 232,9 \mu\text{F}$$

$$\textcircled{4^o} \quad f_R = \frac{1}{2\pi \sqrt{50 \text{ mH} \cdot 0,2 \mu\text{F}}}$$

$$\rightarrow f_R = 1,59 \text{ KHz}$$

$$\textcircled{5^o} \quad \omega_0 = \frac{1}{\sqrt{3 \text{ H} \cdot 5 \text{ mF}}} = 258,2 \text{ rad/s}$$

$$\theta = 258,2 \cdot \frac{3}{5\pi \cdot 20} \rightarrow$$

$$\theta = 38,73$$