9-2：$\dot{U}_m = (10\angle 0° - 20\angle 30°)\,V$

$= (10 - 17.32 - j10)\,V$

$= (-7.32 - j10)\,V$

$= 12.39\angle -126.2°\,V$

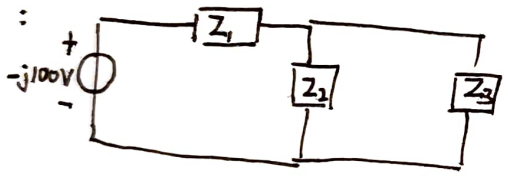
$U = \frac{U_m}{\sqrt{2}} = \frac{12.39}{\sqrt{2}}$

$= 8.76\,V$

$P = \frac{U^2}{R} = \frac{76.78}{10}$

$= 7.68\,W$

9-10：



(1) $Z_2 // Z_3 = \frac{Z_2 Z_3}{Z_2 + Z_3}$

$= \frac{5\angle 53° \times 5\angle -90°}{5\angle 53° + 5\angle 90°}$

$= \frac{25\angle -37°}{3 + j4 - j5}$

$= \frac{20 - j15}{3 - j}$

$= (7.5 - j2.5)\,\Omega$

$Z = Z_1 + Z_2 // Z_3$

$= 0.5 - j3.5 + 7.5 - j2.5$

$= 8 - j6 = 10\angle -36.9°\,\Omega$

(2) $P = I^2 R$

$= 10^2 \times 8$

$= 800\,W$

$\lambda = \cos\varphi_2$

$= \cos(-36.9°)$

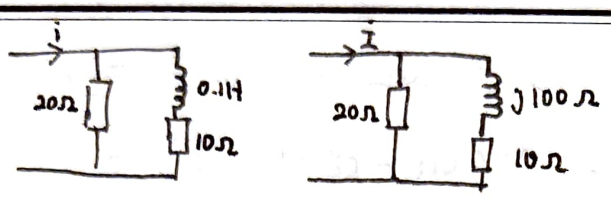
$= 0.8$

$\dot{I} = \frac{100\angle 90°}{Z}$

$= \frac{100\angle -90°}{10\angle -36.9°}$

$= 10\angle -53.1°$

9-16：



$$Z = \frac{20(10+j100)}{20+10+j100} = \frac{20+j200}{3+j10} = (18.9+j3.67)\Omega$$

$$P = I^2R = 10^2 \times 18.9 = 1890\ W$$

$$Q = I^2X = 10^2 \times 3.67 = 367\ var$$

$$S = \sqrt{P^2+Q^2} = \sqrt{1890^2+367^2} = 1925.3\ V.A$$

9-18：要使 $\lambda = 1$，应使 $Q = Q_{RL} + Q_C = 0$

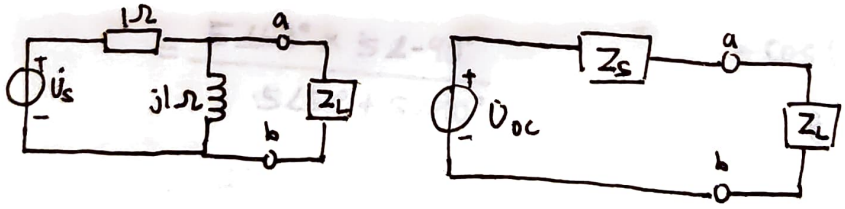
$$Q_C = -\omega C U^2$$

$$C = -\frac{Q_C}{\omega U^2}$$

$$\therefore Q_C = -Q_L = -8\ var$$

$$\therefore C = \frac{8}{100 \times \left(\frac{100}{\sqrt{2}}\right)^2} = 16\ \mu F$$

9-24



$$\dot{U}_{OC} = 14.1\angle 0^\circ \frac{j1}{1+j1} = 14.1\angle 0^\circ \frac{\angle 90^\circ}{\sqrt{2}\angle 45^\circ} = 10\angle 45^\circ$$

$$Z_S = \frac{j1}{1+j1} = \frac{\angle 90^\circ}{\sqrt{2}\angle 45^\circ} = \frac{1}{\sqrt{2}}\angle 45^\circ = (0.5+j0.5)\Omega$$

$$P_{Lmax} = \frac{10^2}{4 \times 0.5} = 50\ W$$

联系方式：_____