

作业纸

课程名称: _____

班级: _____

教学班级: _____

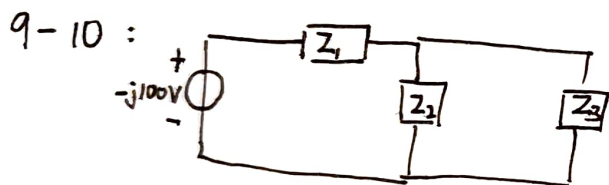
姓名: 曾加健

学号: 1820221053 第 _____ 页

$$\begin{aligned}
 9-2: \quad \dot{U}_m &= (10 \angle 0^\circ - 20 \angle 30^\circ) \text{ V} \\
 &= (10 - 17.32 - j10) \text{ V} \\
 &= (-7.32 - j10) \text{ V} \\
 &= 12.39 \angle -126.2^\circ \text{ V}
 \end{aligned}$$

$$\begin{aligned}
 U &= \frac{U_m}{\sqrt{2}} = \frac{12.39}{\sqrt{2}} \\
 &= 8.76 \text{ V}
 \end{aligned}$$

$$\begin{aligned}
 P &= \frac{U^2}{R} = \frac{76.78}{10} \\
 &= 7.68 \text{ W}
 \end{aligned}$$



$$\begin{aligned}
 (1) \quad Z_2 // Z_3 &= \frac{Z_2 Z_3}{Z_2 + Z_3} \\
 &= \frac{5 \angle 53^\circ \times 5 \angle -90^\circ}{5 \angle 53^\circ + 5 \angle 90^\circ} \\
 &= \frac{25 \angle -37^\circ}{3 + j4 - j5} \\
 &= \frac{20 - j15}{3 - j} \\
 &= (7.5 - j2.5) \Omega
 \end{aligned}$$

$$Z = Z_1 + Z_2 // Z_3$$

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

$$\text{联系方式: } = 8 - j6 = 10 \angle -36.9^\circ \Omega$$

$$(2) \quad P = I^2 R$$

$$= 10^2 \times 8$$

$$= 800 \text{ W}$$

$$\lambda = \cos \varphi_2$$

$$= \cos(-36.9^\circ)$$

$$= 0.8$$

$$\dot{I} = \frac{100 \angle -90^\circ}{Z}$$

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

$$= 10 \angle -53.1^\circ$$

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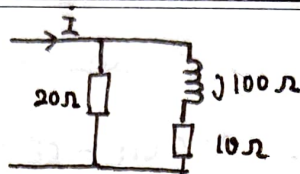
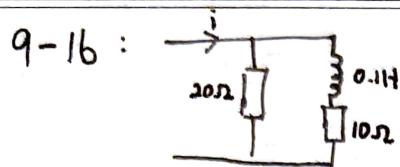
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$$Z = \frac{20(10 + j100)}{20 + 10 + j100}$$

$$= \frac{20 + j200}{3 + j10}$$

$$= (18.9 + j3.67) \Omega$$

$$P = I^2 R$$

$$= 10^2 \times 18.9$$

$$= 1890 \text{ W}$$

$$Q = I^2 X$$

$$= 10^2 \times 3.67$$

$$= 367 \text{ var}$$

$$S = \sqrt{P^2 + Q^2}$$

$$= \sqrt{1890^2 + 367^2}$$

$$= 1925.3 \text{ V.A}$$

9-18: 要使 $\lambda = 1$, 应使 $Q = Q_L + Q_C = 0$

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

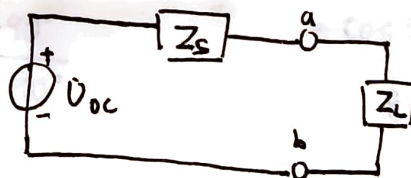
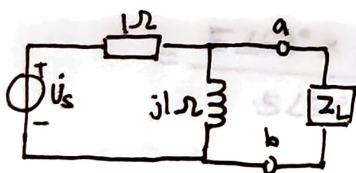
$$\therefore Q_C = -Q_L$$

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

$$= -8 \text{ var}$$

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

9-24



$$U_{oc} = 14.1 \angle 0^\circ \frac{j1}{1+j1}$$

$$= 14.1 \angle 0^\circ \frac{\angle 90^\circ}{\sqrt{2} \angle 45^\circ}$$

$$= 10 \angle 45^\circ$$

$$Z_s = \frac{j1}{1+j1}$$

$$= \frac{\angle 90^\circ}{\sqrt{2} \angle 45^\circ}$$

$$= \frac{1}{\sqrt{2}} \angle 45^\circ$$

$$= (0.5 + j0.5) \Omega$$

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

$$= 50 \text{ W}$$

联系方式: _____