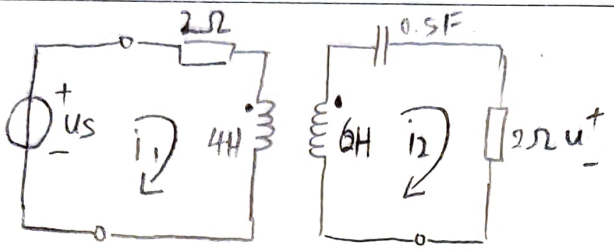
作 业 纸

课程名称：_____

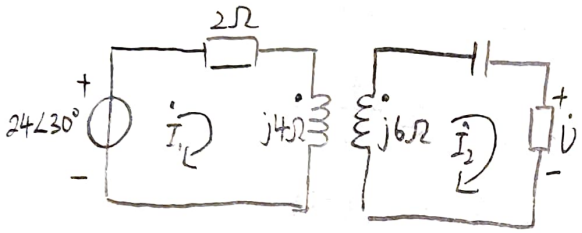
班级：　　教学班级：　　姓名：曾加健　　学号：1820221053　　第　　页

11-3：



$$(2+j4)\dot{I}_1 - j2\dot{I}_2 = 24\angle 30°$$
$$-j2\dot{I}_1 + (2+j6-j2)\dot{I}_2 = 0$$
$$(1+j2)\dot{I}_1 - j\dot{I}_2 = 12\angle 30°$$

$u_S = 24\cos(t+30°)\ V$

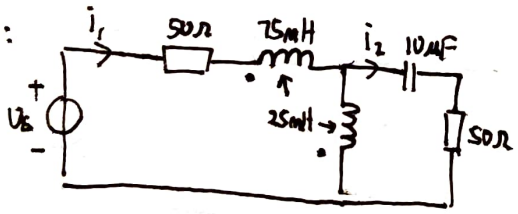


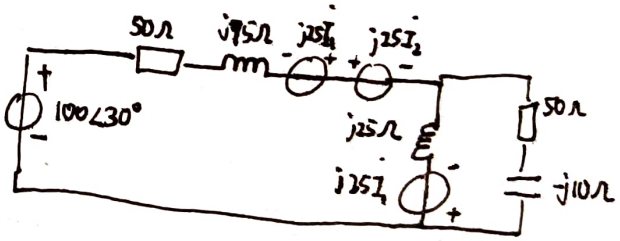
$$\Rightarrow -j\dot{I}_1 + (1+j2)\dot{I}_2 = 0$$
$$\dot{I}_2 + (1+j2)^2\dot{I}_3 = 12\angle 30° + 90°$$

$$\dot{U} = 2\dot{I}_2$$
$$= 5.36\angle 3.4°$$
$$u = 5.36\cos(t+3.4°)\ V$$

$$I_2 = \frac{12\angle 120°}{-2+j4}$$
$$= \frac{12\angle 120°}{4.47\angle 116.6°}$$
$$= 2.68\angle 3.4°$$

11-6：





$u_S(t) = 100\cos(10^3 t + 30°)$

$$(50+j75+j25)\dot{I}_1 - j25\dot{I}_2 - j25\dot{I}_{31} + j25\dot{I}_3 - j25\dot{I}_1 = 100\angle 30°$$
$$j25\dot{I}_1 + (50+j25-j100)\dot{I}_2 + j25\dot{I}_1 = 0$$

$$(50+j50)\dot{I}_1 = 100\angle 30°$$
$$(50-j75)\dot{I}_3 = 0$$

$$\dot{I}_1 = \frac{100\angle 30°}{50\sqrt{2}\angle 45°}$$
$$= \sqrt{2}\angle -15°$$

$$i(t) = \sqrt{2}\cos(10^3 t - 15°)$$

$$\dot{I}_3 = 0$$

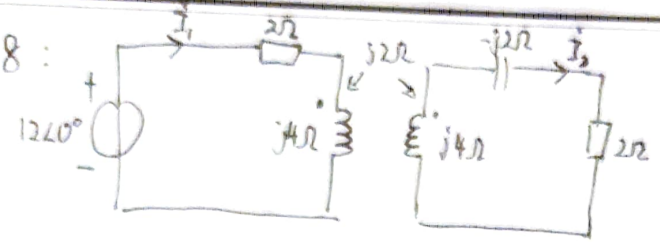
联系方式：_____

作业纸

课程名称：

班级：　　教学班级：　　姓名：　　学号：1820221053　　第　　页

11-8：



$(2+j4)\dot{I}_1 - j2\dot{I}_2 = 12\angle 0° \rightarrow -j2\dot{I}_1 + (2+j2)\dot{I}_2 = 0$

$(1+j2)\dot{I}_1 - j\dot{I}_2 = 6\angle 0° \rightarrow -j\dot{I}_1 + (1+j)\dot{I}_2 = 0$

$\dot{I}_1 = \frac{1+j}{j}\dot{I}_2 = (1-j)\dot{I}_2 = (1-j)\times 2 = 2-j2$

$(1+j2)(1-j)\dot{I}_2 - j\dot{I}_2 = 6$

$3\dot{I}_2 = 6$

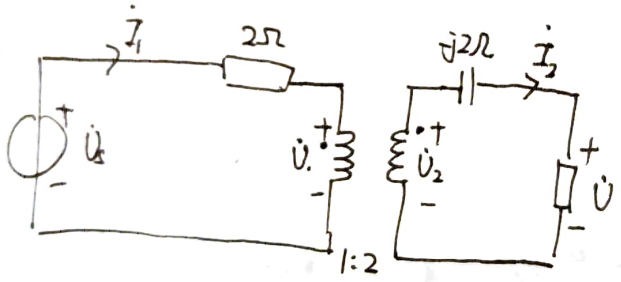
$\dot{I}_2 = 2$

$Z_i = \frac{12\angle 0°}{2-j2}$

$= \frac{12(2+j2)}{8}$

$= 3+j3\Omega$

11-13：



$\dot{I}_2 = \frac{\dot{U}}{2}$

$= \frac{10}{2}\angle 0°$

$= 5\angle 0°$

$\dot{U}_c = \dot{I}_2 Z_c$

$= 5\angle 0° \times 2\angle -90°$

$= 10\angle -90°$

$\dot{U}_2 = \dot{U} + \dot{U}_c$

$= (10-j10)$ V

$\dot{U} = 10\angle 0°$

$\dot{U}_1 = \frac{\dot{U}_2}{2}$

$= 5-j5$

$\dot{U}_s = 5-j5+2\dot{I}_1$

$= 5-j5+2\times 2\times 5$

$= 25-j5$

$= (25.5\angle -11.31°)$

$u_s(t) = 25.5\sqrt{2}\cos(\omega t - 11.31°)$ V

联系方式：

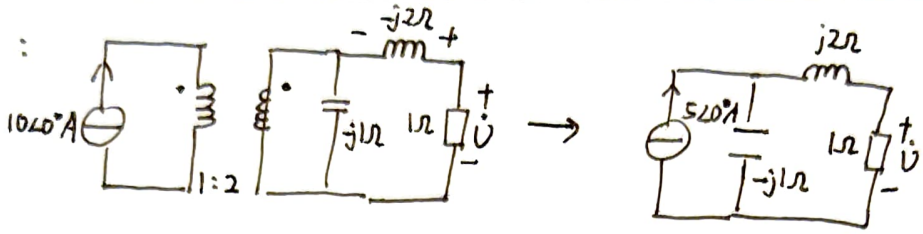
北京理工大学良乡校区管理处监制　　电话：81382088

作 业 纸

课程名称：_____

班级：　　教学班级：　　姓名：　　学号：1820221053　　第　　页

11-14：

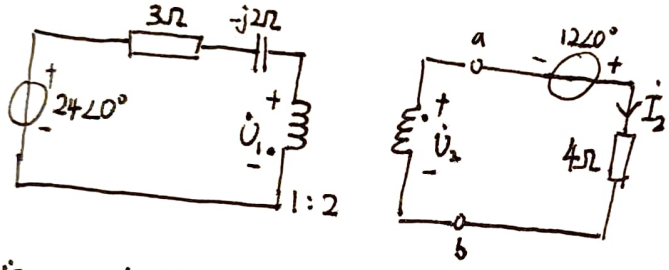


$$\dot{U} = \left(\frac{-j1}{1+j2-j1} \times 5\angle 0° \times 1\right)$$

$$= \frac{5\angle -90°}{\sqrt{5}\angle 45°}$$

$$= 3.54\angle -135° \text{ V}$$

11-16：



$$\dot{U}_{oc} = (-2 \times 24\angle 0°)$$

$$= -48\angle 0° \text{ V}$$

$$\frac{Z_1}{Z_2} = \left(\frac{N_1}{N_2}\right)^2$$

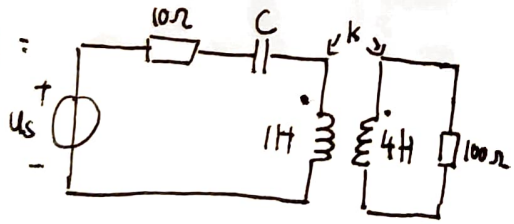
$$= \frac{1}{4}$$

$$Z_2 = [(3-j2)\times 4]$$

$$= 12 - j8\ \Omega$$

$$\dot{I}_2 = \frac{-48+12}{12-j8+4} = \frac{-36}{16-j8} = \frac{-36}{17.89\angle -26.56°} = -2.01\angle 26.56° \text{ A}$$

11-21：



$\omega = 1000\ \text{rad s}^{-1}$

$k = 0.5$

$$k = \frac{M}{\sqrt{L_1 L_2}} = 0.5$$

$$M = 0.5 \times \sqrt{1\times 4}$$

$$= 1\text{ H}$$

$$Z' = \frac{\omega^2 M^2}{100+j4000}$$

$$= \frac{10^6}{100+j4000}$$

$$= (6.25 - j249.8)\ \Omega$$

$$Z = \left(10 + 6.25 - j249.8 + j1000 - j\frac{1}{\omega C}\right)$$

$$1000 = \frac{1}{1000C} + 249.8$$

$$C = \frac{10^{-3}}{750.1} = 1.33\ \mu\text{F}$$

联系方式：_____