

一、填空题

1. 开关断开: $R_{ab} = 9\Omega$; 开关闭合: $R_{ab} = 5\Omega$

2. $u_1 = -L_1 \frac{di_1}{dt} - M \frac{di_2}{dt}$; $u_2 = M \frac{di_1}{dt} + L_2 \frac{di_2}{dt}$

3. $C = 20\mu\text{F}$; $u_o = 20\cos 100\pi t \text{ V}$

4. $P = 12\text{ W}$; $\lambda = 0.8$

5. $i = (1 - e^{-10t})\varepsilon(t) \text{ A}$; $u = [\delta(t) - 10e^{-10t}\varepsilon(t)] \text{ V}$

6. $Y = \begin{bmatrix} \frac{1}{j\omega L} & -\frac{1}{j\omega L} \\ -\frac{1}{j\omega L} & j(\omega C - \frac{1}{\omega L}) \end{bmatrix}$; $H = \begin{bmatrix} j\omega L & 1 \\ -1 & j\omega C \end{bmatrix}$

二、计算题

1. $P_{1V} = 7\text{ W}$; $P_{10V} = 2\text{ W}$

2. (1) $\dot{U}_{oc} = 3\angle 0^\circ \text{ V}$; $Z_{eq} = (3 - j5)\Omega$

(2) $P_{\max} = 0.75\text{ W}$

3. (1) 相量模型略

(2) $H(j\omega) = \frac{1 - \omega^2 + j2\omega}{1 - \omega^2 + j3\omega}$

(3) $u_2 = 2.1\cos(2t + 10.3^\circ) \text{ V}$

4. (1) $u_C = (10 - 15e^{-8t}) \text{ V}$, $t \geq 0$;

$i = 1.5e^{-8t} \text{ A}$, $t > 0$

(2) $t = 51\text{ ms}$

5. (1) 复频域模型略

(2) $i_1(t) = (\frac{9}{16} + \frac{3}{40}e^{-2t} - \frac{3}{80}e^{-4t}) \text{ A}$, $t \geq 0$