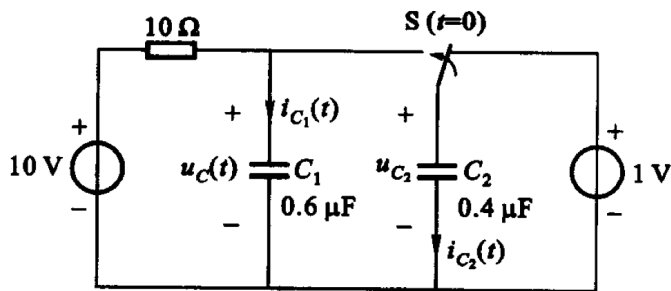


4-31 试用三要素法求解题4-31图所示电路的电容电压 $u_c(t)$ (全响应), 并根据电容电压的解答求出电容电流 $i_{C_1}(t)$ 和 $i_{C_2}(t)$ 。设换路前电路处于稳定状态。



$$u_{C1}(0^-) = u_{C1}(0^+) = 10V$$

$$u_{C2} =$$

3-16 已知题3-16图所示电路的参数为 $L_1 = 8H, L_2 = 6H, L_3 = 10H$, $|M_{12}| = 4H, |M_{23}| = 5H, |M_{13}| = 6H$ 。(图中“*”表示 L_1 与 L_2 的同名端, “·”表示 L_2 与 L_3 的同名端, “Δ”则表示 L_1 与 L_3 的同名端)求电压 u_{ac} 、 u_{bc} 及 u_{ab} 。

解:

$$u_{ac} = L_2 \frac{d}{dt}(2e^{-t}) + M_{12} \frac{d}{dt}(2e^{-t})$$

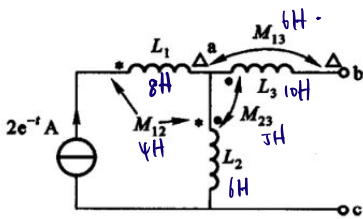
$$= [6 \times (-2e^{-t}) + 4(-2e^{-t})] V = -20e^{-t} V$$

$$u_{bc} = u_{ba} + u_{ac}$$

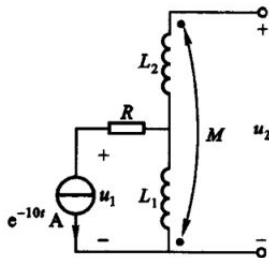
$$= M_{13} \frac{d}{dt}(2e^{-t}) + M_{23} \frac{d}{dt}(2e^{-t}) - 20e^{-t}$$

$$= [-6(-2e^{-t}) - 5(-2e^{-t}) - 20e^{-t}] V = 2e^{-t} V$$

$$u_{ab} = -u_{ba} = -22e^{-t} V$$



题3-16图



题3-17图

$$\frac{di}{dt} = -2e^{-t}$$

$$u_{ac} = 4 \times (-2e^{-t}) + 6 \times (-2e^{-t}) = -20e^{-t} V$$

$$u_{ab} = 6 \times (-2e^{-t}) + 5 \times (-2e^{-t}) = -22e^{-t} V$$

$$u_{bc} = u_{ab} + u_{ac} = u_{ac}$$

$$\therefore u_{bc} = (-20 + 22)e^{-t} = 2e^{-t} V$$