

<电路理论> 答案 2000年

$$(1) \quad \bar{V}_{01} = 0.9 \times 10^7 = 9^7$$

$$\bar{V}_{02} = -0.45 \times 70^7 = -31.5^7$$

$$(2) \quad A(j\omega) = \frac{80}{\left(1 + \frac{j\omega}{1 \times 10^3}\right) \left(1 + \frac{j\omega}{15 \times 10^3}\right)}$$

$$A(s) = \frac{80}{\left(1 + \frac{s}{2\pi \times 10^3}\right) \left(1 + \frac{s}{2\pi \times 15 \times 10^3}\right)}$$

$$\text{取 } P = \frac{5}{2\pi \times 10^3}$$

$$\omega_c = \frac{\omega}{2\pi \times 10^3}$$

$$\text{By } A(p) = \frac{80}{\left(1 + \frac{p}{5}\right) \left(1 + \frac{p}{15}\right)}$$

$$A(j\omega) = \frac{80 \times 5 \times 15}{\sqrt{(9 - \omega^2)^2 + 22.5\omega}} = \frac{600}{\omega}$$

$$\rightarrow \omega_{3dB} = 4.67 \quad \text{By } \omega_{3dB} = 2\pi \times 4.67 \times 10^3 \text{ rad/sec}$$

$$f_{3dB} = 4.67 \text{ kHz}$$

(3) 反置电路：由 $C_1 \rightarrow C_2$ 之间接互感线圈。

电路为 LC 并联电路。

$$\omega_0 = \sqrt{\frac{1}{L(C_1 \parallel C_2)}} = \sqrt{\frac{1}{50 \times 10^{-3} \times 0.02 \times 10^{-6}}} = 3.16 \times 10^4 \text{ rad/sec}$$

$$f_0 = \frac{\omega_0}{2\pi} = 5 \text{ kHz}$$