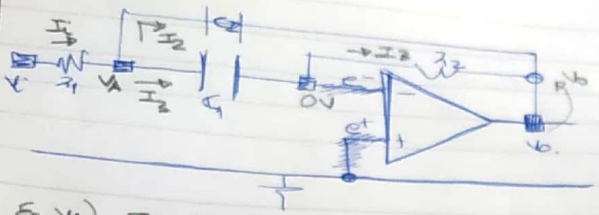
PSCE d) ii)



$e^- - e^+ \} \boxed{e^- = 0}$
$e^+ = 0$

En V_A) $I_i = I_2 + I_3$

$$\frac{V_i - V_A}{Z_1} = \frac{V_A - V_b}{1/j\omega C_2} + \frac{V_A}{1/j\omega C_1} \Rightarrow \frac{V_i - V_A}{Z_1} = (V_A - V_b) j\omega C_2 + V_A j\omega C_1$$

$$V_i = (V_A - V_b) j\omega Z_1 C_2 + V_A j\omega Z_1 C_1 + V_A$$

$$V_i = (j\omega Z_1 C_2 + j\omega Z_1 C_1 + 1) V_A - j\omega Z_1 C_2 V_b \quad (1)$$

En e^- (0V)) $I_3 = I_3$

$$\frac{V_A}{1/j\omega C_1} = -\frac{V_b}{Z_2} \Leftrightarrow j\omega C_1 V_A = -\frac{V_b}{Z_2} \Rightarrow V_A = -\frac{V_b}{j\omega Z_2 C_1} \quad (2)$$

$$V_i = \left[(j\omega) Z_1 (C_1 + C_2) + 1\right] \left(\frac{-V_b}{(j\omega) Z_2 C_1}\right) - j\omega Z_1 C_2 V_b$$

$$\frac{V_i}{V_b} = -\left[\frac{(j\omega)(C_1 + C_2) Z_1 + 1}{(j\omega) Z_2 C_1} - \frac{(j\omega)^2 Z_1 Z_2 C_1 C_2}{(j\omega) Z_2 C_1}\right]$$

$$\frac{V_b}{V_i} = -\frac{(j\omega) Z_2 C_1}{(j\omega)^2 Z_1 Z_2 C_1 C_2 + (j\omega)(C_1 + C_2) Z_1 + 1}$$

$$\frac{V_o}{V_i} = -Z_2 C_1 \frac{j\omega}{\left[(j\omega)^2 \frac{Z_1 Z_2 C_1 C_2}{Z_1 Z_2 C_1 C_2} + (j\omega) \frac{(C_1 + C_2) Z_1}{Z_1 Z_2 C_1 C_2} + \frac{1}{Z_1 Z_2 C_1 C_2}\right] Z_1 Z_2 C_1 C_2}$$

$$H(j\omega) = \frac{-Z_2 C_1}{Z_1 Z_2 C_1 C_2} \frac{j\omega}{(j\omega)^2 + (j\omega) \frac{(C_1 + C_2) Z_1}{\sqrt{Z_1 Z_2 C_1 C_2}} \cdot \frac{1}{\sqrt{Z_1 Z_2 C_1 C_2}} + \frac{1}{Z_1 Z_2 C_1 C_2}}$$

$\frac{1}{\sqrt{Z_1 Z_2 C_1 C_2}} = \omega_0$; $\frac{1}{Z_1 Z_2 C_1 C_2} = \omega_0^2$

$$H(j\omega) = \frac{-Z_2 C_1}{Z_1 Z_2 C_1 C_2} \frac{j\omega}{(j\omega)^2 + (j\omega) \frac{(C_1 + C_2) Z_1}{\sqrt{Z_1 Z_2 C_1 C_2}} \cdot \omega_0 + \omega_0^2}$$

$$\rightarrow \frac{1}{Q} = \frac{(C_1 + C_2) Z_1}{\sqrt{Z_1 Z_2 C_1 C_2}}$$