No.

Date

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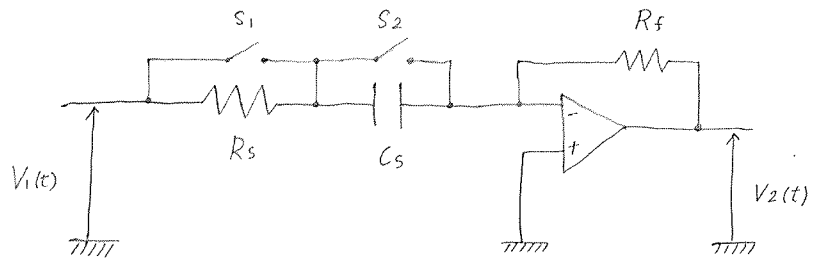

(1) (a) $\dfrac{V_1(t)}{R_s} = \dfrac{-V_2(t)}{R_f}$ $\therefore$ $V_2(t) = -\dfrac{R_f}{R_s} V_1(t)$ //

(b) $\dfrac{V_1(t)}{\frac{1}{j\omega C_s}} = \dfrac{-V_2(t)}{R_f}$ $\therefore$ $V_2(t) = -\dfrac{R_f}{\frac{1}{j\omega C_s}} V_1(t) = -j R_f \omega C_s V_1(t)$ //

(2) (a) $\dfrac{V_1(t)}{R_s + \frac{1}{j\omega C_s}} = -\dfrac{V_2(t)}{R_f}$

$\dfrac{V_2(t)}{V_1(t)} = -\dfrac{j\omega C_s R_f}{j R_s \omega C_s + 1}$

$\therefore A_v = \left| \dfrac{V_2(t)}{V_1(t)} \right| = \dfrac{\omega C_s R_f}{\sqrt{1 + R_s^2 \omega^2 C_s^2}} = \dfrac{2\pi f \cdot 10^{-6} \cdot 10^5}{\sqrt{1 + 10^8 \cdot 4\pi^2 f^2 \cdot 10^{-12}}} = \dfrac{2\pi f \cdot 10^{-1}}{\sqrt{1 + 4\pi^2 f^2 \cdot 10^{-4}}}$

$= \dfrac{1}{\sqrt{10^{-2} + \frac{1}{4\pi f^2 10^{-2}}}} = \dfrac{10}{\sqrt{1 + \left(\frac{100}{2\pi f}\right)^2}}$ //

(b) $A_v = \dfrac{10}{\sqrt{2}}$ より $\sqrt{1 + \left(\frac{100}{2\pi f}\right)^2} = \sqrt{2}$

$\therefore \dfrac{100}{2\pi f} = 1$

$f = \dfrac{100}{2\pi} = \dfrac{50}{\pi} \fallingdotseq 16$ [Hz] //