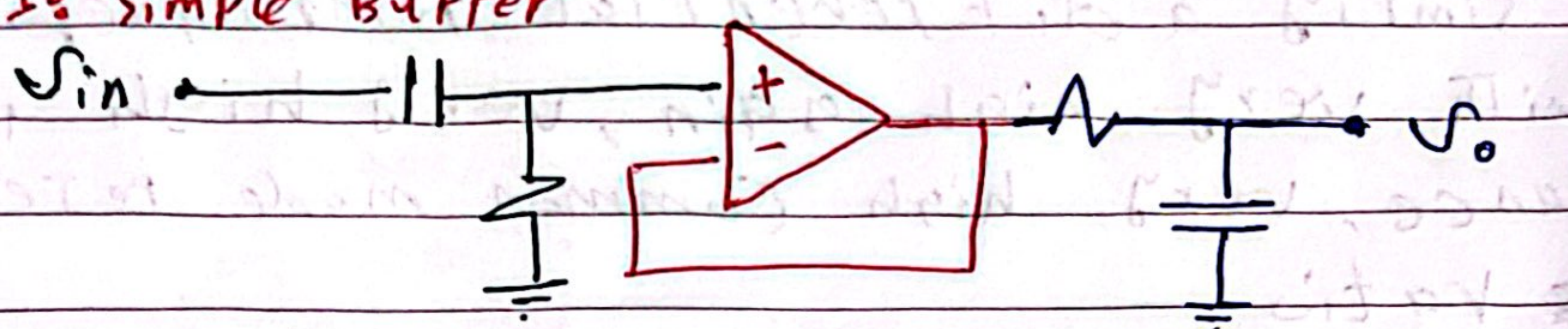
التاريخ: / / الموضوع:

Band Pass filter

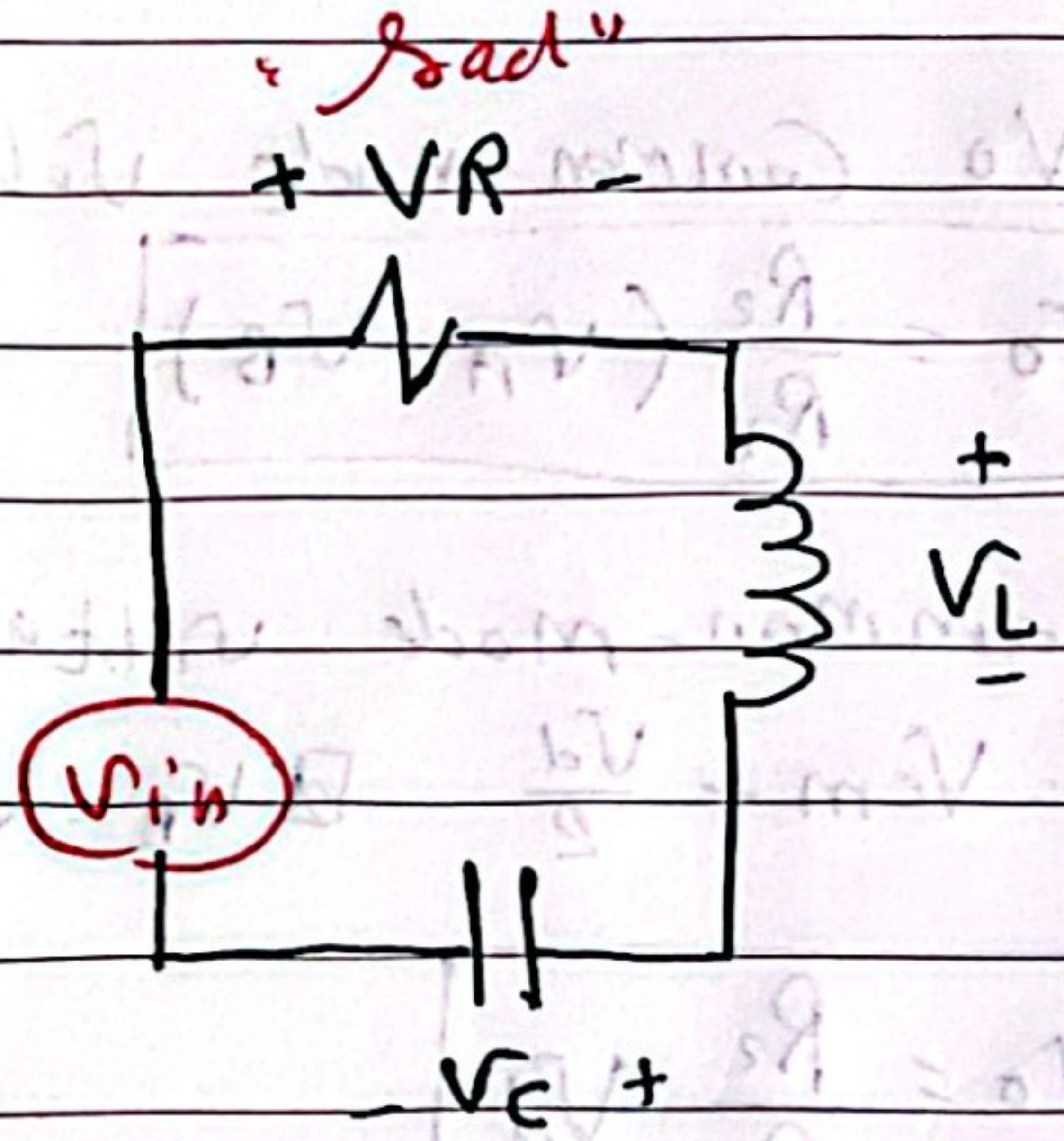
"2-Pole filter"

⇒ Sol1: simple Buffer



H.P.F L.P.F

⇒ Sol2: simple LRC



$\omega_c = \sqrt{\frac{1}{LC}}$

$\omega_c = 2\pi f_c$

$Q = \frac{1}{R}\sqrt{\frac{L}{C}}$

↳ $Q = \frac{f_c}{\Delta f}$

Ex: Design 2-Pole bandPass filter with bandwidth of 0.1 Hz and $f_c = 1\,Hz$ load is $100\,\Omega$
↳ Δf ↳ f_o

$\because f_c = \frac{1}{2\pi\sqrt{LC}}$

$\therefore \boxed{1 = \frac{1}{2\pi\sqrt{LC}}} \rightarrow (1)$

$\because Q = \frac{f_c}{\Delta f} = \frac{1}{0.1} = 10$

$\therefore \boxed{10 = \frac{1}{100}\sqrt{\frac{L}{C}}} \rightarrow (2)$

⇒ from (1) and (2):

L = 159 H C = 159 MF