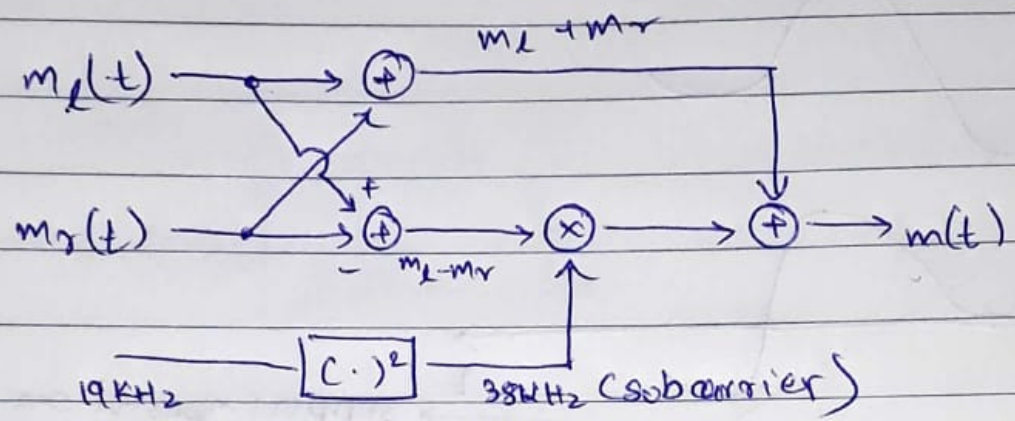
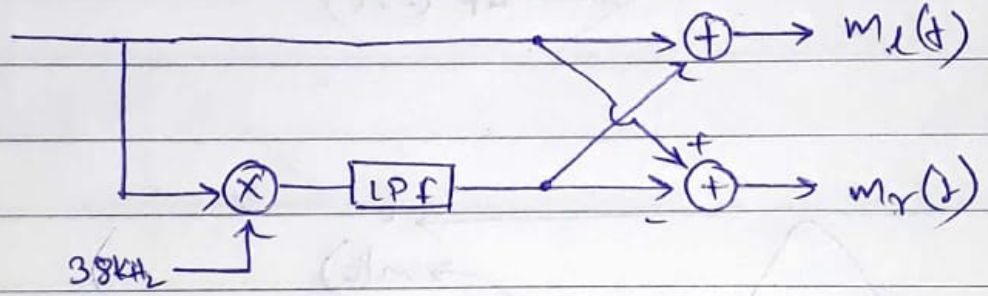
Loop filter → Effectively a low pass filter
→ Very low cut off frequency.

Vcdrl ∝ Duty cycle ∝ Δϕ

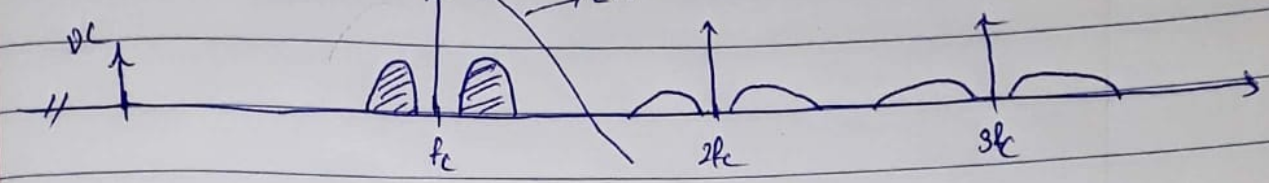
⊛ FM Stereo

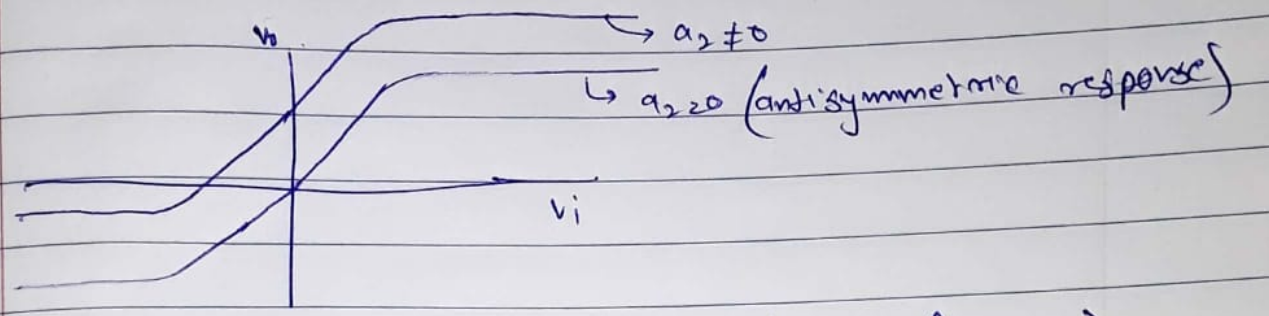




$+ \frac{A_c^3 a_3}{4} \cos(6\pi f_c t + 3\phi_{FM}(t))\}$ 3rd harmonic

→ Gain (Linear) = a_1 → LPF





→ An amplifier shows gain compression ⇒ ($a_3 < 0$)

↳ Non-linearity in AM $\quad v_i = A_c(1 + k_a m(t)) \cos(2\pi f_c t)$

$v_o = A_c(1 + k_a m(t)) \left[a_1 + \frac{3A_c^2(1 + k_a m(t))^2}{4} a_3\right] \cos 2\pi f_c t$