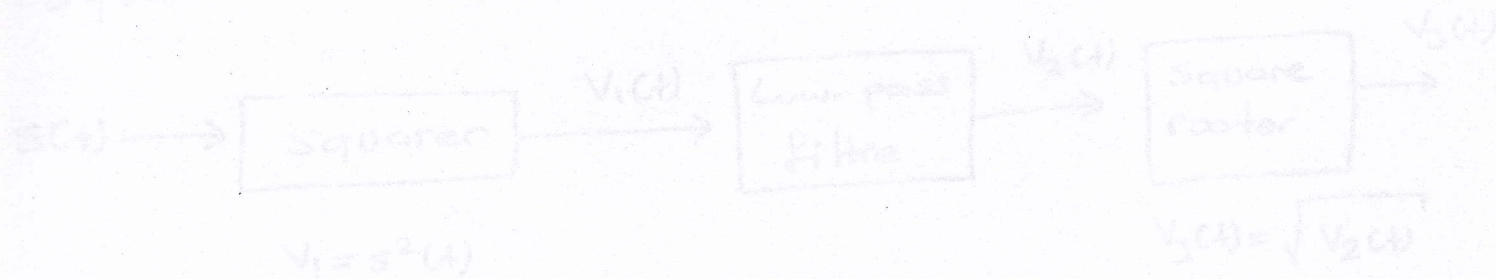


Square rooter:

$$V_2(t) = \frac{A_c^2}{2} [1 + k_a m(t)]^2 \cos(2\pi f_c t)$$

$$\sqrt{V_2(t)} = V_3(t)$$

$$V_3(t) = \frac{A_c}{\sqrt{2}} [1 + k_a m(t)]$$



Calculation:

$$s(t) = A_c [1 + k_a m(t)] \cos(2\pi f_c t)$$

$$s^2(t) = [A_c [1 + k_a m(t)] \cos(2\pi f_c t)] [A_c [1 + k_a m(t)] \cos(2\pi f_c t)]$$

$$s^2(t) = A_c^2 [1 + k_a m(t)]^2 \cos^2(2\pi f_c t)$$

$$V_1(t) = A_c^2 [1 + 2k_a m(t) + m^2(t)] \cdot \frac{1}{2} [1 + \cos(4\pi f_c t)]$$

LPF output:

$$\frac{A_c^2}{2} [1 + 2k_a m(t) + m^2(t)] + \frac{A_c^2}{2} [1 + 2k_a m(t) + m^2(t)] [\cos(4\pi f_c t)]$$