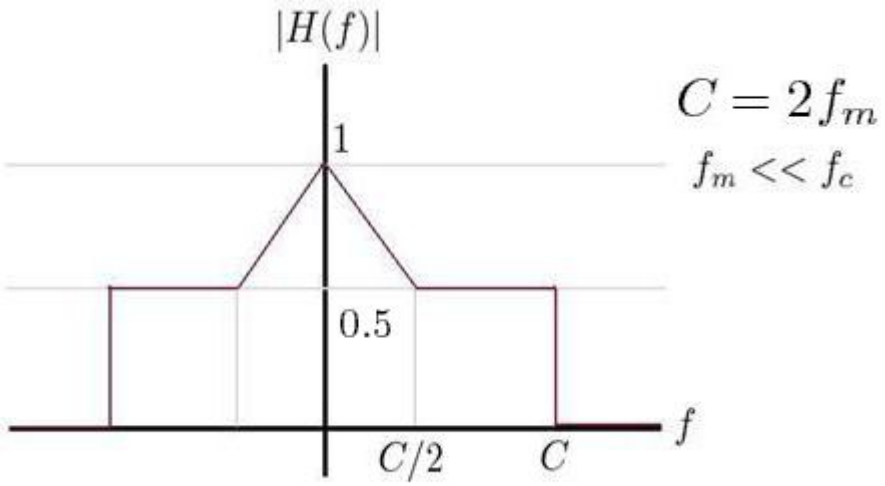
Input to the filter shown below is the sum of white noise given as

$$W(f) = N_o/2 \quad (\text{for all f})$$

and received signal (in this case pilot signal) given as

$$r(t) = A\{\cos[2\pi(f_c + f_m)t] + \sin[2\pi f_c t]\}\cos(2\pi f_c t)$$



a) Calculate output noise power, P_{n_o} .

b) Find output of the filter for received signal, $y(t)$

$$r(t) \rightarrow Filter \rightarrow y(t)$$

Calculate output signal power, P_y . Also calculate P_y / P_{n_o} ratio (SNR_o).

c) Repeat part b with $r(t) = K\delta(t)$.

d) How does it affect P_{n_o} when cut-off frequency of the LPF is increased ? To maximize the SNR_o what should be the cut-off frequency of the LPF, why?

Write "Kendi öz çalışmamdır" underneath homework sheet you are handing in, and sign it.