Prob. 1. Design a 4-th order Chebyshev filter* for $f_0 = 10$Mhz with a tuning range from 1Mhz to 20Mhz. Use a 1.2v Power Supply, 0.18um CMOS technology. Focus to obtain the highest IIP3, minimum power/pole, maximum Dynamic range, and minimum input referred noise [nV/sqrt(hz)]. You can use an active-R or Gm-C filter, and use a basic two-stage amplifier( also known as three current mirror configuration)

*Summarize your results in the same form of Table III in Hesam and Pankratz paper (i.e., IEEE JSSC, vol. 44, No. 2, pp. 495-508, February 2009)

Prob. 2. In order to reduce the noise for the designed Biquad in prob. 1, propose a feedforward amplifier (filter) to reduce the output noise and consequently the input referred noise. See for instance Lect. 4 notes.