

HOMEWORK #11

1) (a) Use Matlab to observe the poles and zeros of Butterworth bandpass filters as the 3 db cutoff frequencies and the number of poles all vary. Discuss your results.

(b) Use Matlab to observe the poles and zeros of Chebychev type 1 bandpass filters as the ripple band frequencies, the amount of ripple, and the number of poles all vary. Discuss your results; compare your results to those of (1a).

2) (a) Find an equal capacitor realization of a Butterworth filter that is at most 1 db down for frequencies below 5 KHz and at least 40 db down for frequencies above 10 KHz.

(b) Find an equal capacitor realization of a Chebychev type 1 filter that is at most 1 db down for frequencies below 5 KHz and at least 40 db down for frequencies above 10 KHz.

3) (a) Find an equal capacitor realization of a Butterworth filter that is at most 0.5 db down for frequencies above 10 KHz and at least 30 db down for frequencies below 5 KHz.

(b) Find an equal capacitor realization of a Chebychev type 1 filter that is at most 0.5 db down for frequencies above 10 KHz and at least 30 db down for frequencies below 5 KHz.

4) (a) Find an equal capacitor realization of a Butterworth filter that is at most 1 db down for frequencies between 8 KHz and 12 KHz and at least 35 db down for frequencies below 6 KHz and above 14 KHz.

(b) Find an equal capacitor realization of a Chebychev type 1 filter that is at most 1 db down for frequencies between 8 KHz and 12 KHz at least 35 db down for frequencies below 6 KHz and above 14 KHz.