Electrical Engineering Department

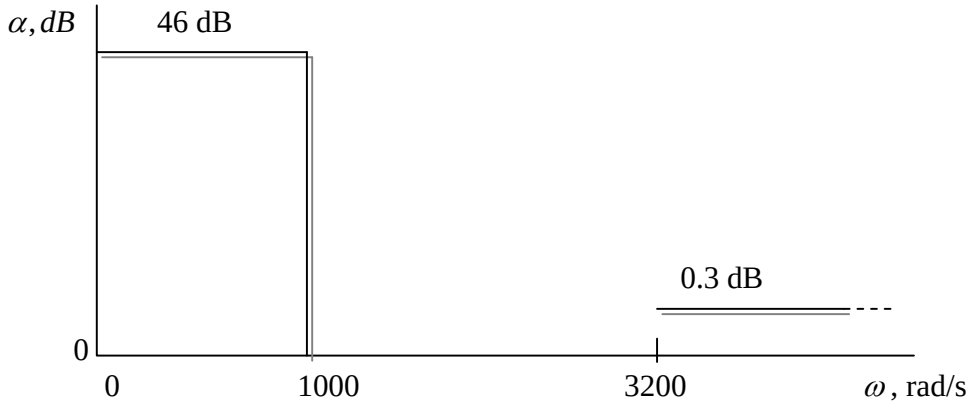
EE-416 Analog Filter Design

Instructor: Dr. Hussain Alzaher

H.W.# 3

Due Saturday, Nov .25, 2006

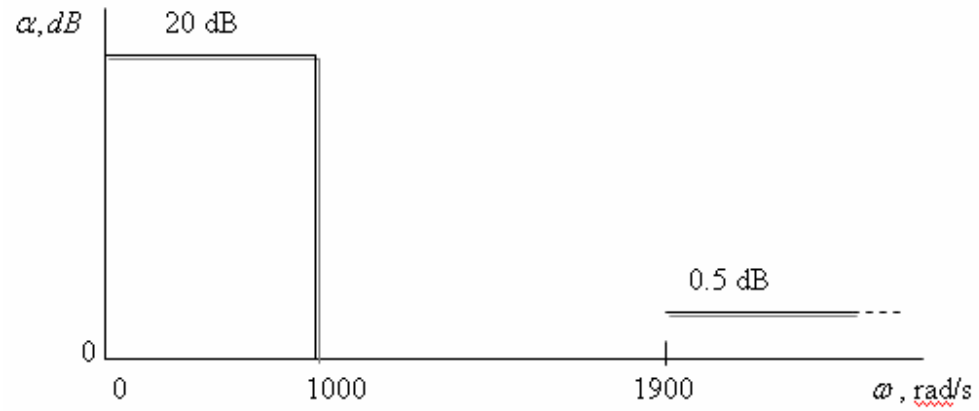
1) Design a highpass filter with a maximally flat response to meet the attenuation specification given. Determine the attenuation your filter realizes at the two frequencies $\omega = 1.2$ krad/s and $\omega = 800$ rad/s.



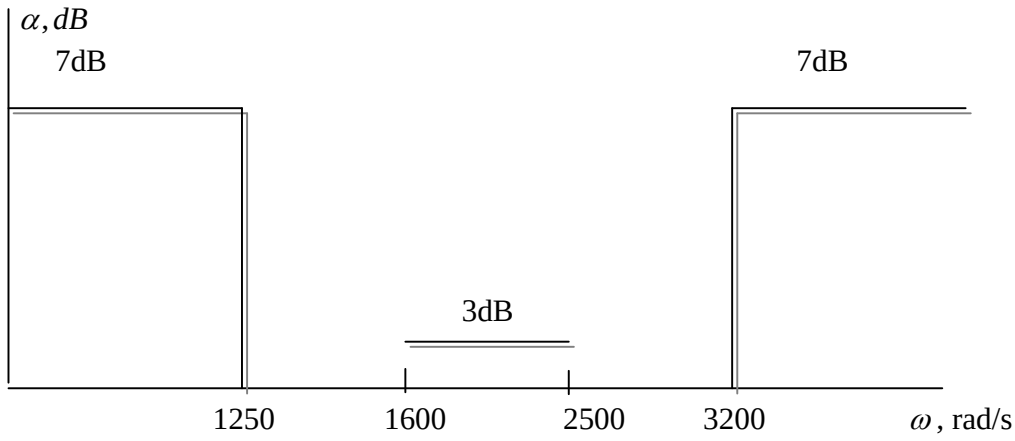
2) A highpass filter with a Chebyshev passband is required. The specifications are as shown.

(a) Find the transfer function of the required filter.

(b) Determine the loss actually realized by your design at $\omega = 1100$ rad/s and $\omega = 900$ rad/s.



3) Design a bandpass filter to meet the specifications shown, with the added requirement that the response be Butterworth. It is required that $\alpha(2000) = 0dB$.



4) Design a bandstop filter with a maximally flat magnitude response having the frequency characteristic shown. Calculate the attenuation your design actually achieves at $f = 800Hz$ and $f = 850Hz$. Use magnitude scaling so that element values are in practical range. If possible use all identical capacitors and no more than four opamps (a"quad"). Test your design.