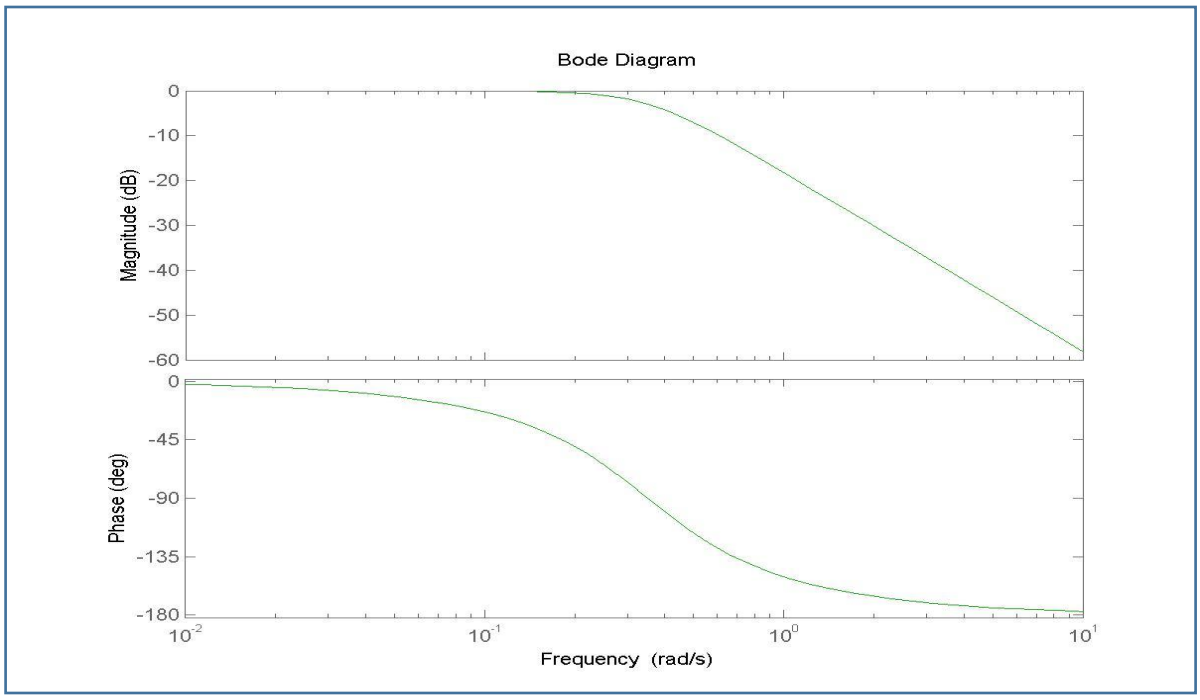
LABORATORY 04
Filter Design using MATLAB

Chamara k.k.v
E/14/049

1).

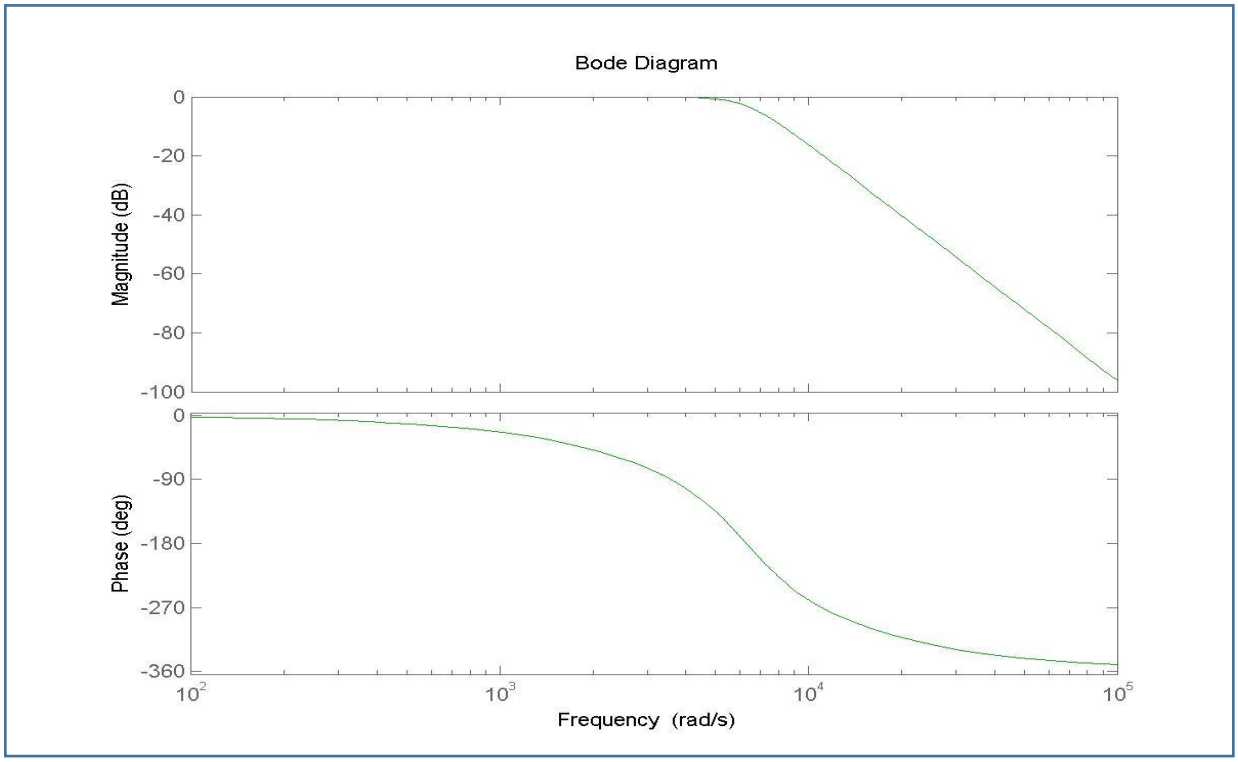
```
clear all;

N=4; %order

samplerate = 35000;
Fp = 1000 ;
Fs = 5000;
Rp = -3;
Rs = -40;
Wp = 2*pi*Fp/samplerate; %passband edge angular frequency
Ws = 2*pi*Fs /samplerate; %stopband edge angular frequency

[n,Wn] = buttord(Wp,Ws,Rp,Rs);

[num,den] = butter(n,Wn,'s');

G = tf(num,den);

bode(G,'g');
```



According to the Fp and Fp this is Low pass filter. I assume that sample rate is 35 000 sam/sec.

2).

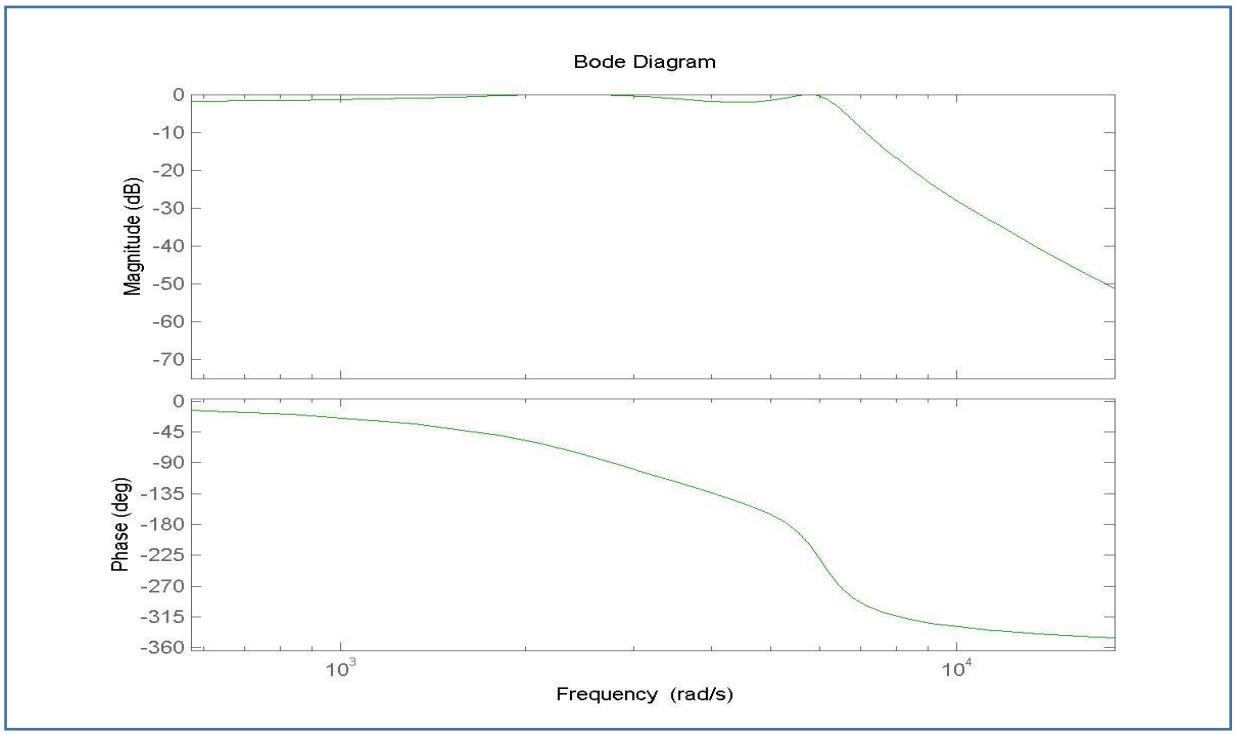
```
clear all;

N = 4; %order

Fp = 1000;

Wp = 2*pi*Fp; %passband edge angular frequency

[num,den] = butter(N,Wp,'s');
G = tf(num,den);

bode(G,'g');
```



In here I assume that the specifications are for the low pass filter and the Wc is equal to the Wc since there are like to be the same.

3).

```
clear all;

N = 4; %order

Rp = 2; %maximum passband attenuation
Fp = 1000;

Wp = 2*pi*Fp; %passband edge angular frequency

[num,den] = cheby1(N,Rp,Wp,'s');
G = tf(num,den);

bode(G,'g');
```



In here I assume that the filter is low pass filter.