

EE387 – SIGNAL PROCESSING

LAB 4

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SEMESTER 6

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Exercise 01

CODE

```
clear all;
close all;

fp = 1000;
fs = 5000;

sampleRate = 70000; %it is assumed
that sampling rate is 70kHz

Wp = 2*pi*fp/(sampleRate/2);
Ws = 2*pi*fs/(sampleRate/2);

[n,Wn] = buttord(Wp,Ws,3,60);

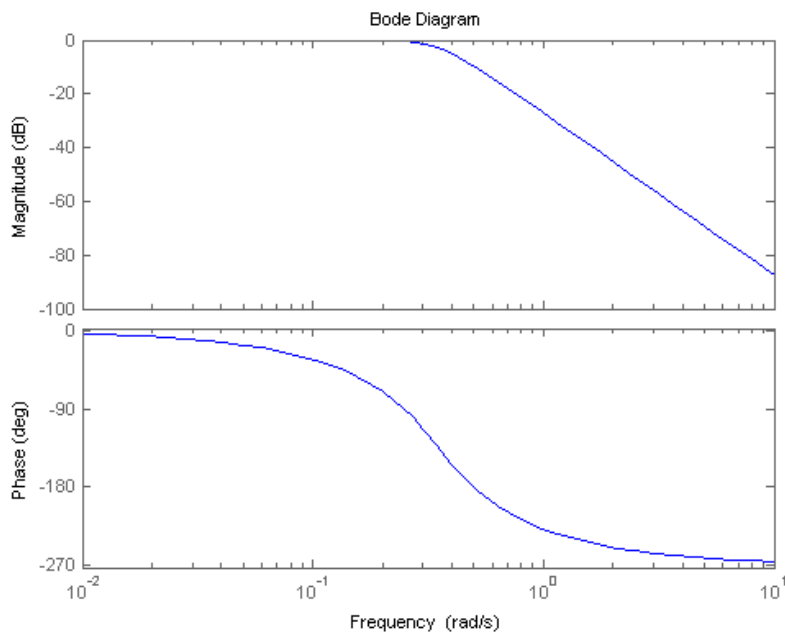
[num,den] = butter(n,Wn,'s');

H=tf(num,den)

bode(H)
```

- Here fp is taken as the passband frequency and fs as stopband frequency.

OUTPUT



```
>> ex1
```

```
H =
```

```
-----  
0.04347  
s^3 + 0.7032 s^2 + 0.2473 s + 0.04347
```

```
Continuous-time transfer function.
```

Exercise 02

CODE

```
clear all;
close all;

fp = 1000;

sampleRate = 70000;

N = 4;

Wn = 2*pi*fp/(sampleRate/2);

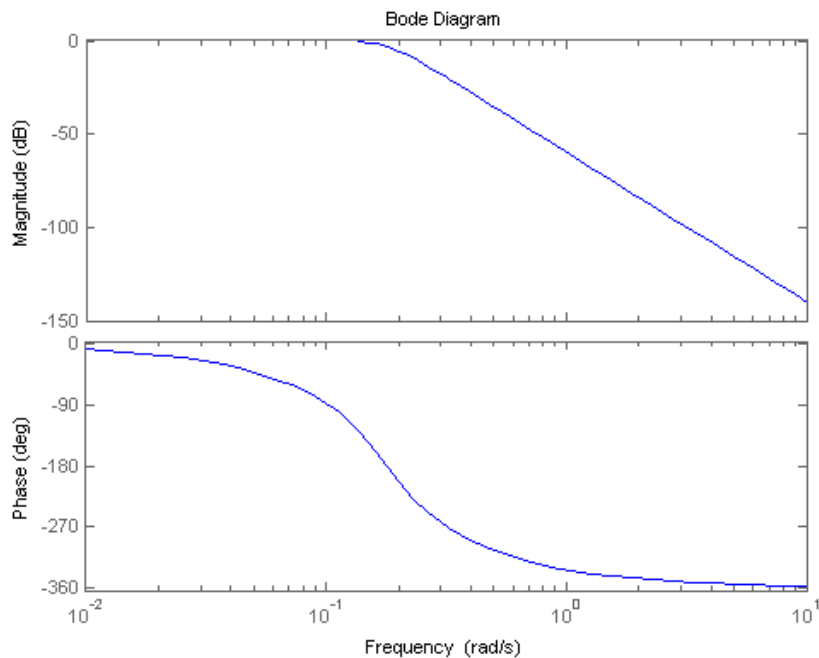
[num,den] = butter(N,Wn,'s');

H=tf(num,den)

bode(H)
```

- Here fp is taken as the cutoff frequency.

OUTPUT



```
>> ex2

H =

          0.001039
-----
s^4 + 0.4691 s^3 + 0.11 s^2 + 0.01512 s + 0.001039

Continuous-time transfer function.
```

Exercise 03

CODE

```
clear all;  
close all;  
  
sampleRate = 70000;  
  
N = 4;  
  
Rp = 2;  
  
fp = 1000;  
  
Wn = 2*pi*fp/(sampleRate/2);  
  
[num,den] = cheby1(N,Rp,Wn,'s');  
  
bode(H)
```

- Here fp is taken as the cutoff frequency.

OUTPUT

