Low Pass Filter

Code:

clc

clear all

pass\_band\_edge = 2

stop\_band\_edge = 4.828

alpha\_p = 3

alpha\_s = 15

a=log(10^(0.1\*alpha\_s)-1/10^(0.1\*alpha\_p)-1);

b=log(stop\_band\_edge/pass\_band\_edge);

N=ceil(0.5\*(a/b))

s = %s

H\_s = 1/(s^2 + 1.414\*s + 1)

cutoff = pass\_band\_edge/(10^(0.1\*alpha\_p)-1)^(1/(2\*N))

H\_designed=horner(H\_s,s/cutoff)

disp(N)

disp(cutoff)

disp(H\_designed)

Output:

2.

2.0023759

1

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1 + 0.7061611s + 0.2494071s2

High Pass Filter

Code:

clc

clear all

pass\_band\_edge = 4.828

stop\_band\_edge = 2

alpha\_p = 3

alpha\_s = 15

a=log(10^(0.1\*alpha\_s)-1/10^(0.1\*alpha\_p)-1);

b=log(pass\_band\_edge/stop\_band\_edge);

N=ceil(0.5\*(a/b))

s = %s

H\_s = 1/(s^2 + 1.414\*s + 1)

cutoff = pass\_band\_edge/(10^(0.1\*alpha\_p)-1)^(1/(2\*N))

H\_designed=horner(H\_s,cutoff/s)

disp(N)

disp(cutoff)

disp(H\_designed)

Output:

2.

4.8337354

s2

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23.364998 + 6.8349018s + s2