**Experiment 7**

**Designing of Chebyshev Lowpass and Highpass Filter.**

**% Aim:Designing of Chebyshev Lowpass ans Highpass Filter.**

clc;

close all;

clear all;

rp=input('enter the passband ripple: ');

rs=input('enter the stopband ripple: ');

wp=input('enter the passbandfreq: ');

ws=input('enter the stopbandfreq: ');

fs=input('enter the sampling freq: ');

w1=2\*wp/fs;

w2=2\*ws/fs;

[n,wn]=cheb1ord(w1,w2,rp,rs);

%LOW PASS FILTER

[b,a]=cheby1(n,rp,wn);

w=0:0.01:pi;

[h,om]=freqz(b,a,w);

m=20\*log10(abs(h));

an=angle(h);

subplot(2,2,1);

plot(om/pi,m);

ylabel('Gain in dB');

xlabel('(a) Normalised Frequency');

title('Low pass Filter');

subplot(2,2,2)

plot(om/pi,an);

ylabel('Gain in dB');

xlabel('Phase in radians');

title('Low pass Filter');

%HIGH PASS FILTER

[b,a]=cheby1(n,rp,wn,'high');

w=0:0.01/pi:pi;

[h,om]=freqz(b,a,w);

m=20\*log10(abs(h));

an=angle(h);

subplot(2,2,3);

plot(om/pi,m);

ylabel('Gain in dB');

xlabel('(a) Normalised Frequency');

title('High pass Filter');

subplot(2,2,4)

plot(om/pi,an);

ylabel('Gain in dB');

xlabel('Phase in radians');

title('High pass Filter');

gtext('name');

**Input:**

enter the passband ripple: 0.2

enter the stopband ripple: 45

enter the passbandfreq: 1300

enter the stopbandfreq: 1500

enter the sampling freq: 10000

**output:**