**High pass:**

clear;

clc;

close;

s = poly(0,'s');

Omegac = 0.2\*%pi;

H = Omegac/(s+Omegac);

T =1;*//Sampling period T = 1 Second*

z = poly(0,'z');

Hz\_LPF = horner(H,(2/T)\*((z-1)/(z+1)));

alpha = -(cos((Omegac+Omegac)/2))/(cos((Omegac-Omegac)/2));

HZ\_HPF=horner(Hz\_LPF,-(z+alpha)/(1+alpha\*z))

HW =frmag(HZ\_HPF(2),HZ\_HPF(3),512);

W = 0:%pi/511:%pi;

plot(W/%pi,HW)

a=gca();

a.thickness = 3;

a.foreground = 1;

a.font\_style = 9;

xgrid(1)

xtitle('Magnitude Response of Single pole HPF Filter Cutoff frequency = 0.2\*pi','Digital Frequency--&gt;','Magnitude');

disp(“HZ\_HPF”,HZ\_HPF);

**low pass:**

clear;

clc;

close;

s = poly(0,'s');

Omegac = 0.2\*%pi;

H = Omegac/(s+Omegac);

T =1;*//Sampling period T = 1 Second*

z = poly(0,'z');

Hz = horner(H,(2/T)\*((z-1)/(z+1)))

HW =frmag(Hz(2),Hz(3),512);

W = 0:%pi/511:%pi;

plot(W/%pi,HW)

a=gca();

a.thickness = 3;

a.foreground = 1;

a.font\_style = 9;

xgrid(1)

xtitle('Magnitude Response of Single pole LPF Filter Cutoff frequency = 0.2\*pi','Digital Frequency-->','Magnitude');

Disp(“Hz”,Hz);

**Unit:**

t = -5:0.1:5; *// Time values from -5 to 5*

y = zeros(1, length(t)); *// Initialize the signal with zeros*

y(t >= 0) = 1; *// Set values to 1 where t >= 0*

plot(t, y, "LineWidth", 2); *// Plot the signal*

xlabel("Time (t)"); *// Label the x-axis*

ylabel("u(t)"); *// Label the y-axis*

**Impulse:**

t = -5:0.1:5;

impulse = zeros(t);

impulse(t == 0) = 1;

plot(t, impulse);

xlabel('Time');

ylabel('Amplitude');

title('Unit Impulse Signal');

**Exponential:**

t =0:0.1:10;

x = exp (t) ;

plot (t ,x )

title ( ' exponential wave ' ) ;

xlabel ( ' t ' ) ;

ylabel ( ' x ' ) ;

**Sinu:**

f =50;

t =0:0.001:0.02;

x = sin (2\* %pi \* t \* f ) ;

plot (t ,x )

title ( ' sine wave ' ) ;

xlabel ( ' t ' ) ;

ylabel ( ' x ' ) ;

**Ramp:**

t = 0:0.1:10;

ramp = t;

plot(t, ramp);

xlabel("Time (t)");

ylabel("Amplitude");

title("Unit Ramp Signal");

**routh:**

clear;

clc;

*//xdel(winsid());*

mode(0);

s=%s;

H=s^4+2\*s^3+3\*s^2+4\*s+5;

*//H=s^5+7\*s^4+6\*s^3+42\*s^2+8\*s+56;*

disp(H,'The given characteristics equation 1-G(s)H(s)=');

c=coeff(H);

len=length(c);

r=routh\_t(H);

disp(r,"Rouths table=");

x=0;

for i=1:len

if(r(i,1)<0)

x=x+1;

end

end

if(x>=1)

printf("From Rouths table, it is clear that the system is unstable.")

else

printf("From Rouths table, it is clear that the system is stable.")

end

**bilinear:**

clear;

clc ;

close ;

s=%s;

z=%z;

HS=(s^2+4.525)/(s^2+0.692\*s+0.504);

T=1;

HZ=horner(HS,(2/T)\*(z-1)/(z+1));

disp(HZ,'H(z) =');

**impulsive:**

*//To Design the Filter using Impulse Invarient Method*

clear;

clc ;

close ;

s=%s;

T=0.2;

HS=10/(s^2+7\*s+10);

elts=pfss(HS);

disp(elts,'Factorized HS = ');

*//The poles comes out to be at -5 and -2*

p1=-5;

p2=-2;

z=%z;

HZ=T\*((-3.33/(1-%e^(p1\*T)\*z^(-1)))+(3.33/(1-%e^(p2\*T)\*z^(-1))))

disp(HZ,'HZ = ');

**dif-fft:**

clear;

clc ;

close ;

x = [1,2,3,4,4,3,2,1];

*//FFT Computation*

X = fft (x , -1);

disp(X,'X(z) = ');

**dit-fft:**

clear;

clc ;

close ;

x = [1,-1,-1,-1,1,1,1,-1];

*//FFT Computation*

X = fft (x , -1);

disp(X,'X(z) = ');