

%% A. Unit Impulse Response

%I.

n = (-5:20);

delta = @(n) 1.0.*(n==0);

a=[1 -0.16 -0.16];

b= [0 0 0.33];

h = filter(b,a,delta(n));

clf;

stem(n,h,'k');

xlabel('n');

ylabel('h[n]');

%II.

a=[1 0 0.25];

b= [0 0 1];

h = filter(b,a,delta(n));

clf;

stem(n,h,'k');

xlabel('n');

ylabel('h[n]');

%%B. Zero Input Response

delta = @(n) 1.0.*(n==0);

a=[1 -0.16 -0.16];

b= [0 0 0.33];

z = filtic(b,a,[1 2]);

some = filter(b,a,delta(n),z);

stem(n,some,'k');

xlabel('n');

ylabel('y[n]');

%%C. Zero-state Response

n = (0:11);

x = @(n)2.*cos(2*pi*n/6).*(n>=0 & n<10);

a = [1 -0.3 -0.1];

b = [0 0 2];

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z = firltic(b,a,[1 2]);  
y0 = filter(b,a,zeros(size(n)),z);  
stem(n,y0,'k');  
xlabel('n');  
ylabel('y_{0} [n]');
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%%D. Total Response

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y = filter(b,a,x(n));  
stem(n,y,'k'); xlabel('n'); ylabel('y[n]');
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%%E.

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result = conv(some(n),x(n));  
stem([0:60],y,'k'); xlabel('n'); ylabel('y[n]');
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