Tutorials

1. Plot pole-zero plot of the given system and comment on stability and causality.
2. Determine the magnitude and phase response of the given system

y(n)= .

Comment on the characteristics of the system.

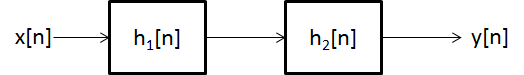
1. Test whether the given system y(n) = 2x(n) + 1/(x(n-1) is

a) Linear

b)Time-invariant

c)causal.

1. The system is depicted by cascade interconnection of LTI systems given below



Find the overall impulse response of the complete system when h1[n]= , where o < a < 1 and h2[n] =u[n]-u[n-3].

1. Obtain Inverse Z-Transform of for causal input condition.
2. The eight point DFT of a discrete sequence a[n] is given by

{28 , -4+j9, -4+j4 , -4+j6 , -4 , -4-j6, -4-j4, -4-j9}.

Determine the input sequence a[n] using FFT. Further deduce a[n+2] using suitable DFT property.

1. A digital filter is required to meet the following specifications

Passband ripple ≤ 1 *dB*

Stopband attenuation ≥ 40dB

Two edge frequencies are 4KHz(stopband) and 6KHz(passband).

Sampling rate is 24KHz

1. Transform A frequency normalised 2nd order analog filter with monotonic passband and stopband into the filter that allows the frequencies in the range [300 – 600 Hz] and blocks below 150Hz and above 800Hz.

Further get the digital equivalent by matching the poles from analog to digital domain. Assume suitable sampling time.

1. Design a FIR LPF with pass band cut-off frequency as 2000Hz and stop band cut-off frequency as 3500Hz with pass band ripple 0.05 and stop band attenuation as between 50 to 60dB. Assume the window based on the stop band attenuation, sampling frequency is 8000Hz and the order of the filter is 7
2. Design a linear phase FIR band pass filter using Hanning window with a cut off frequency and Order N=7.



1. Determine the different structures for the given LTI system