

1. Consider an input  $x[n]$  and an impulse response  $h[n]$  given by  
 $x[n] = [1, -1, -1, -1, 1, 0, 1, 2]$ ;  $h[n] = [5, -4, 3, 2, -1, 1, 0, -1]$   
Determine circular convolution and plot the output  $y[n]$
2. Write a MATLAB program to demonstrate Linear and Circular Convolution operation graphically for the input sequence and impulse sequence  
(a)  $x = [2 \ 1 \ 2 \ 1]$ ;  $h = [1 \ 2 \ 3]$
3. Write a MATLAB program to convolve input signal  $x(t) = u(t-1)$  with impulse signal  $h(t) = \exp^{-t} \cdot u(t)$
4. Consider an input  $x[n]$  and a unit impulse response  $h[n]$  given by  
 $x[n] = (1/2)^{n-2} u[n-2]$ ;  $h[n] = u[n+2]$   
Determine and plot the output  $y[n] = x[n] * h[n]$
5. Find the autocorrelation of  $x[n] = [1, -1, 1, -1, 1, -1]$ . Plot the output.
6. Find the cross correlation between two sequences  $x[n]$  and  $h[n]$   
 $x[n] = [1, 0, 2, 1]$ ;  $h[n] = [1, 1, 2, 1]$