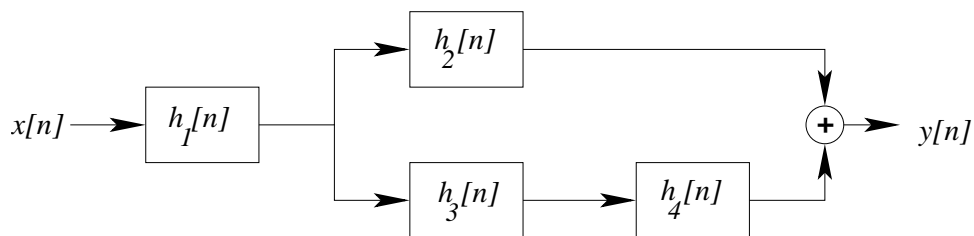


## EE 451

## Homework #2

Due August 31, 2001

1. Problem 2.20 from the text.
2. Problem 2.21 from the text. For part (c) use the MATLAB stem routine to plot the function for at least two periods, and show that the function does repeat.
3. Problem 2.26 (a) (b) (e) (f) from the text.
4. Problem 2.33 from the text.
5. Problem 2.34 from the text.
6. Problem 2.44 from the text.
7. Consider the interconnection of LTI systems shown below:



- (a) Express the overall impulse response  $h[n]$  in terms of  $h_1[n]$ ,  $h_2[n]$ ,  $h_3[n]$ , and  $h_4[n]$ .
- (b) Determine  $h[n]$  when

$$\begin{aligned}
 h_1[n] &= \frac{1}{2}\delta[n] + \frac{1}{4}\delta[n-1] + \frac{1}{2}\delta[n-2] \\
 h_2[n] &= 3\delta[n] + 5\delta[n-3] \\
 h_3[n] &= \delta[n] \\
 h_4[n] &= 2\delta[n+1] - 5\delta[n-1]
 \end{aligned}$$

- (c) Determine the output of the system when the input is

$$x[n] = 3\delta[n+2] - 2\delta[n-1] + \delta[n-3]$$