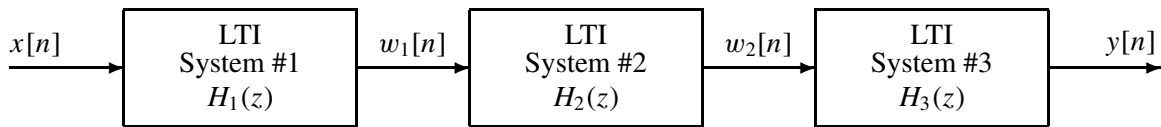## PROBLEM:

A cascade of three FIR discrete-time systems is depicted by the following block diagram:

The systems are defined by the following:

$$H_1(z) = (1 + z^{-1})(1 - 0.2z^{-1}) \quad \text{and} \quad h_2[n] = (0.8)^n u[n] \quad \text{and} \quad h_3[n] = (0.2)^{n-1} u[n-1]$$

(a) Determine a *simplified* system function $H(z)$ for the overall system.

$H(z) =$

(b) Determine the impulse response for the overall system.

$h[n] =$

(c) For the input $x[n] = \delta[n] - 0.8\delta[n-1]$, determine the output $y[n]$.

$y[n] =$