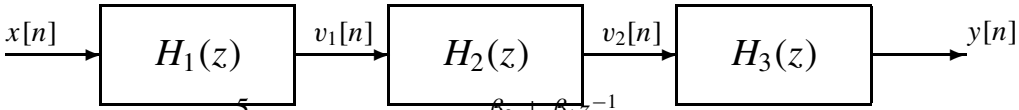
PROBLEM:

In the following cascade of systems, all systems are defined by their transfer functions.



(a) Determine the unknown coefficients $\{ \beta_0,\ \beta_1,\ \alpha \}$ so that the impulse response of the overall system will be $h[n] = 2\delta[n-1] + 3\delta[n-2]$.

(b) Using part (a), determine the overall difference equation that relates $x[n]$ to $y[n]$.