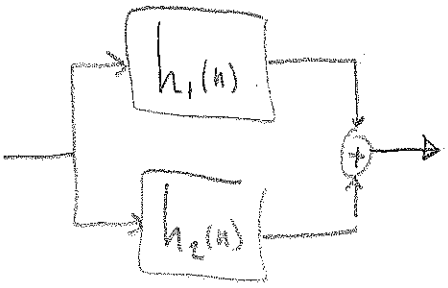
EE 3054 - Quiz 2 - Spring 2013

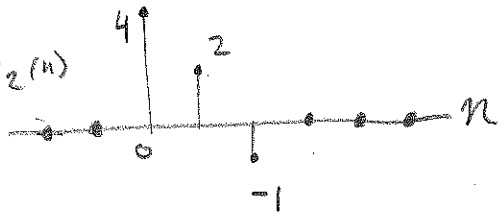
(1)



2 LTI systems connected.

Given $H_1(z) = 2 + 3z^{-1}$

$h_2(n)$

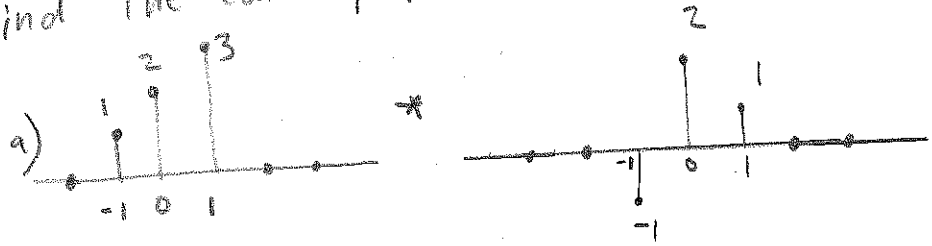


a) Find the impulse response (sketch it) of the total system, $h_{TOT}(n)$

b) Find the transfer function of total system, $H_{TOT}(z)$.

(2) Find the conv. of following (sketch your ans.)

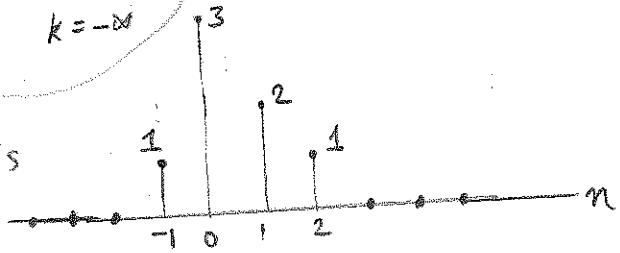
a)



b) $\delta(n) * u(n)$

c) $\delta(n) * \sum_{k=-\infty}^{\infty} (-1)^k \delta(n-3k)$

(3) Signal $x(n)$ is



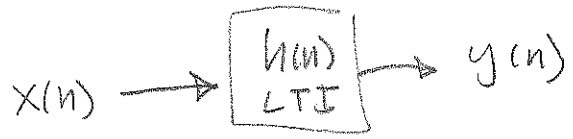
a) Find $X(z)$

b) Define $G_1(z) = z^2 X(z)$. Sketch $g(n)$

c) Define $P(z) = X(1/z)$. Sketch $p(n)$

d) Define $R(z) = X(-2z)$. Sketch $r(n)$.

④



$$x(n) = 3\left(\frac{1}{2}\right)^n u(n)$$

$$h(n) = \left(\frac{1}{3}\right)^n u(n)$$

a) find $X(z)$ and its ROC

b) find $H(z)$ and its ROC

c) find $Y(z)$ and its ROC

d) find $y(n)$.