

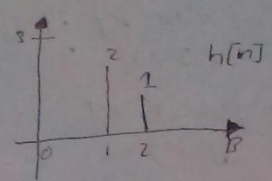
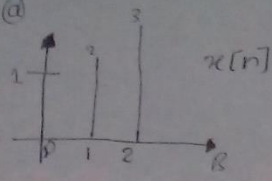
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Course: Signal and System

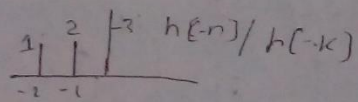
Instructor: Engineer Mujtaba

Sir there was some issue in my laptop so I was not able to attach the question sheet

Q. 1. a



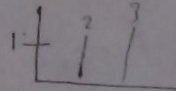
First we reflect the signal $h[n]$ to $h[-n]$
 $h[-k] = h[0-k]$ OR $h[-n] = h[0-n]$



Step 1:- for $n=0$
 $y[0] = x[k] \cdot h[0-k] = 1 \times 3 = 3$

Step 2:- for $n=1$
 $y[1] = 0$

for $n=1$



$y[n] = x[k] \cdot h[1-k]$
 $= 1 \times 2 + 2 \times 3$
 $= 8$

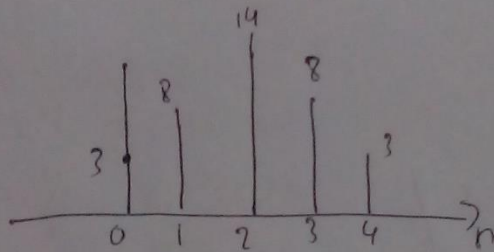
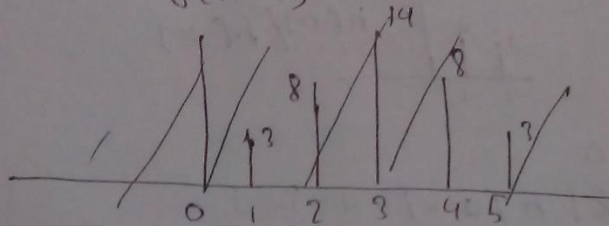
Step 3:- for $n=2$
 $y[n] = x[k] \cdot h[2-k]$
 $= 1 \times 1 + 2 \times 2 + 3 \times 3$
 $= 1 + 4 + 9$
 $= 14$

Step 4:- for $n=3$
 $y[n] = x[k] \cdot h[3-k]$
 $= 1 \times 2 + 2 \times 3$
 $= 8$

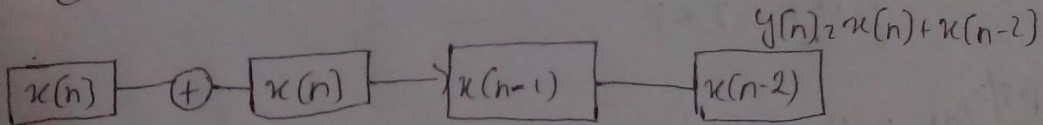
Step ⑤ $y[n] = x[k] \cdot h[4-k]$
 $= 3 \times 1 = 3$

Step ⑥ for $n > 4$
 $y[n] = 0$

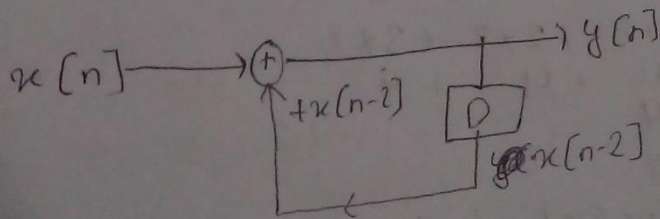
$y[n] = 3\delta[n] + 8\delta[n-1] + 14\delta[n-2] + 8\delta[n-3] + 3\delta[n-4]$



Q0(b)



OR



Q2 Part a: (3)

(1) $x(t+5)$

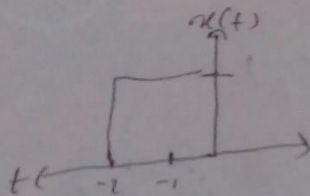
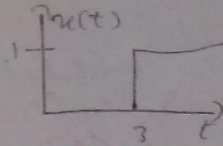
At

$t=3, x(t)=1$

$t+5=3, x(t+5)=1$

$t=-5+3, x(t+5)=1$

$t=-2$



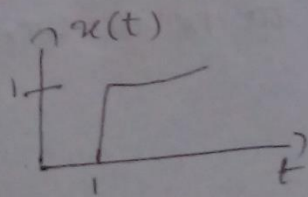
(2) $x(3t)$

$t=3, x(t)=1$

$3t=3, x(3t)=1$

$t=\frac{3}{3}, x(3t)=1$

$t=1, x(3t)=1$

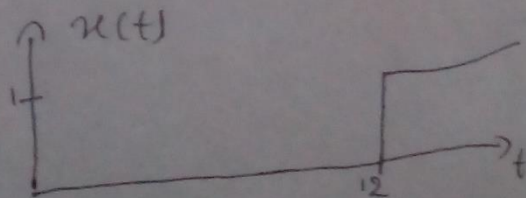


(3) $x(t/4)$

$t=3, x(t)=1$

$\frac{t}{4}=3, x(t/4)=1$

$t=12, x(t/4)=1$



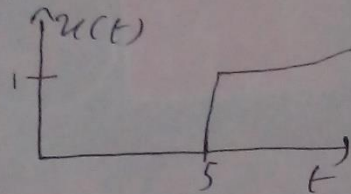
④ $x(t-2)$

$t=3, x(t)=1$

$t-2=3, x(t-2)=1$

$t=5, x(t-2)=1$

④



Part ⑥

- ① ~~This system~~ $y[n] = x^6[n]$ is said to be non-invertible as the sign of the input cannot be determined after studying the output.
- ② $y_n = x[n+2]$ is non-causal as it involves the future value of input.

Q3. Such system is said to be an even system