

Ans) no 1

Question = 01

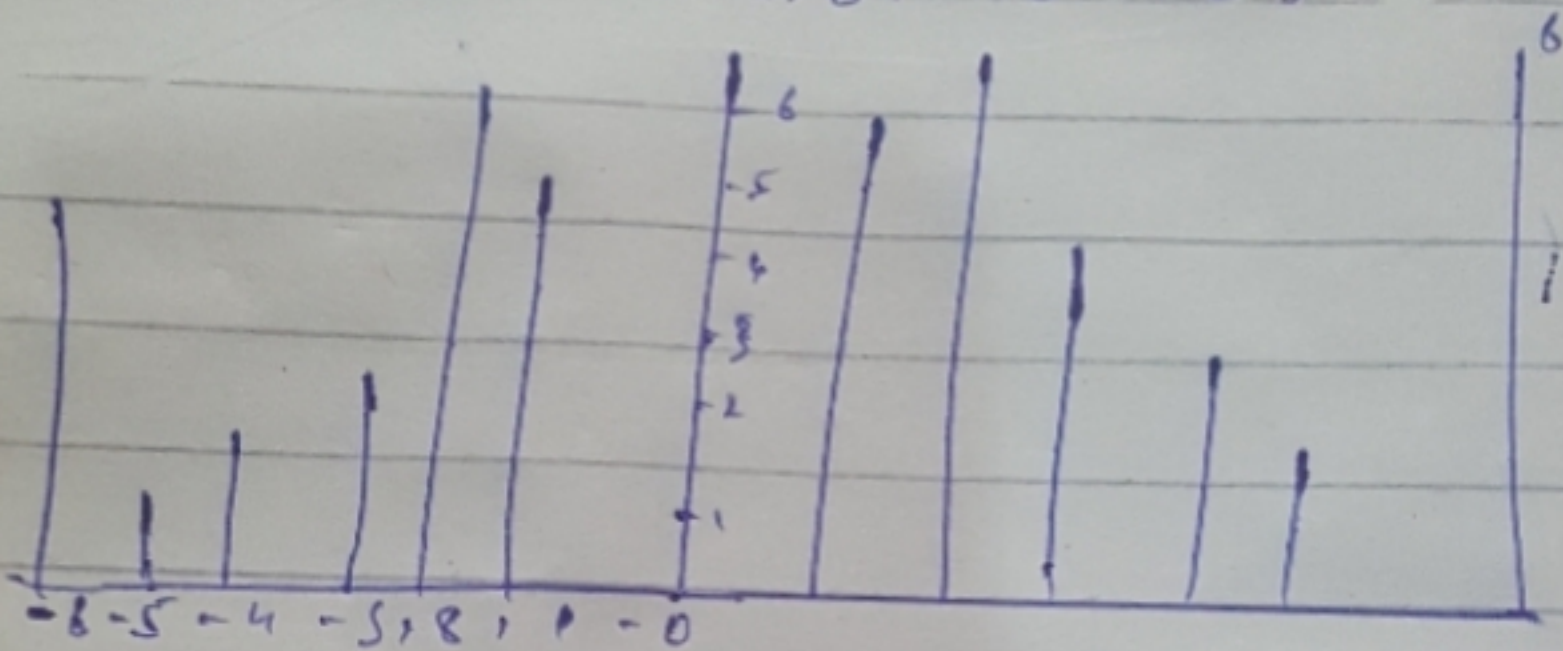
(A)

$$C_1 e + n_0 = C_1 e$$

(b)

$$C_1 e = (n_0 - 1) e = C_1 e^2$$

$$x(n) = [7, 8, 4, 3, 2, 6]$$



$$\Rightarrow C_1 e = \frac{1}{n_0} \sum_{n=0}^{n_0-1} x(n) e^{-j \left(\frac{2\pi}{n_0} \right) n}$$

$$e^{j\alpha} = \cos \alpha + j \sin \alpha$$

$$\text{So } e^{-j \left(\frac{2\pi}{2\pi} \right) n} = \cos \left(\frac{\pi}{1} n \right) + j \sin \left(\frac{\pi}{1} n \right)$$

$$\text{Or } e^{-j(n\pi)} = \cos(n\pi) + j \sin(n\pi)$$

$$= 1 - j$$

$$C_1 e = \frac{1}{6} \sum_{n=0}^{5} x(n) (-j-1)^n$$

$$C_0 = \frac{1}{6} \sum_{n=0}^5 x(n) (1)$$

$$C_0 = \frac{1}{6} [x(7) + x(8) + x(4) + x(3) + x(2) + x(6)]$$

$$C_0 = \frac{1}{6} (7 + 8 + 4 + 3 + 2 + 6) = \frac{31}{6}$$

$$\Rightarrow [C_0 = 5.16] \text{ Dc. component}$$

Now at $t = 1$

$$C_1 = \frac{1}{6} \sum_{n=0}^5 x(n) (-j)^n$$

$$C_1 = \frac{1}{6} (-j)^0 x(7) + (-j)^1 x(8) +$$

$$+ (-j)^2 x(4) + (-j)^3 x(3) + (-j)^4 x(2) + (-j)^5 x(6)$$

$$\Rightarrow C_1 = \frac{1}{6} [-2 - 7 + 23j]$$

$$C_1 = \frac{-1}{7} + \frac{j}{23}$$

Also solve for C_2 C_3 C_4 C_5

find coefficient as to time range.

$$C_2 = \frac{-1}{4} + \frac{j}{23}$$

1st Property

$$C_{l+N} = C_l$$

$$C_1 + 4 \neq C_1$$

and property

2nd property.

$$C^{-1}e = C_{no} - e = e^{1e}$$

$$= C_{n3} = C_i$$

$$C_3 = C_i^0$$

$$\frac{-1}{7} - \frac{1}{23}, \quad 2 \frac{-1}{7} + \frac{1}{25} d$$

Milal

6966

Question. 02.

Solution

$$x[n] = \sum_{k=-\infty}^{\infty} x[k] \delta[n-k]$$

$$x[n] = \begin{bmatrix} 6 & 9 & 6 & 6 \\ 0 & 1 & 2 & 3 \end{bmatrix}$$

$$k = 6966$$

$$\Rightarrow x[0] \delta[n-6] + x[9] \delta[n-2]$$

$$= x[2] \delta[n-9] + x[3] \delta[n-6]$$

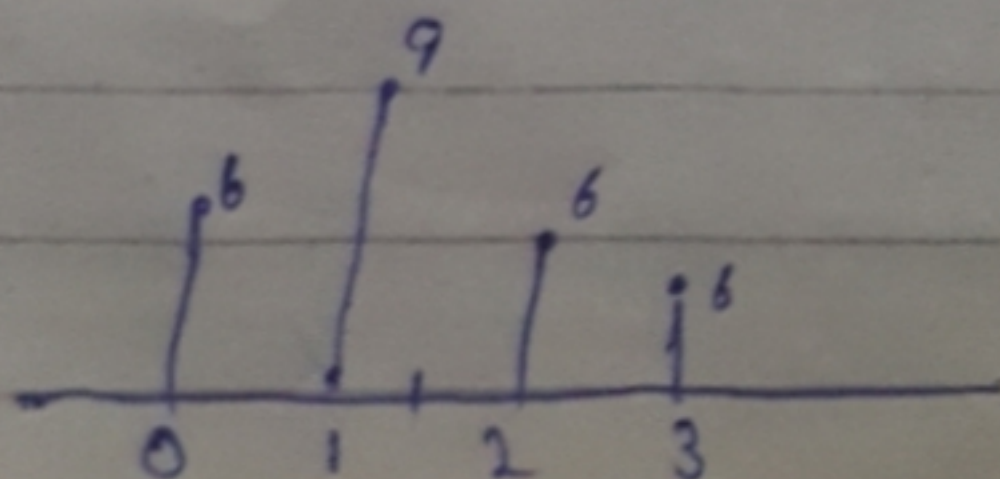
$$= \delta[n] = 6\delta[n] + 9\delta[n-1] +$$

+

$$+ 6\delta[n-2] + 6\delta[n-3]$$

Magnitude 2

$$\begin{bmatrix} 0 & 1 & 2 & 3 \\ 6 & 9 & 6 & 6 \end{bmatrix}$$

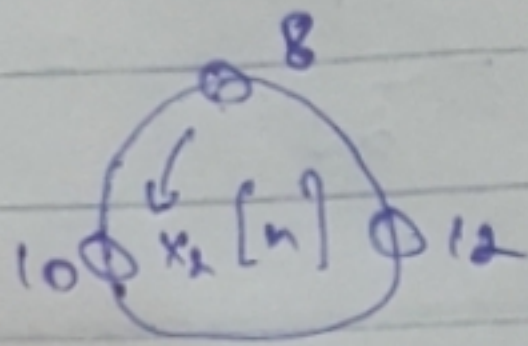
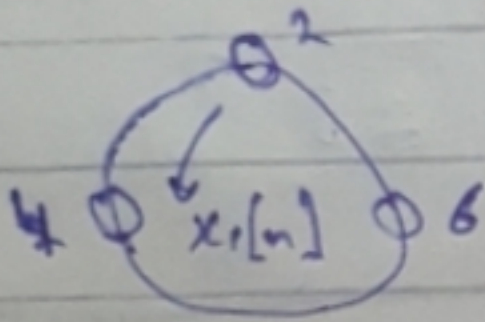
Location 2 $\delta[n]$ 

Question = 05

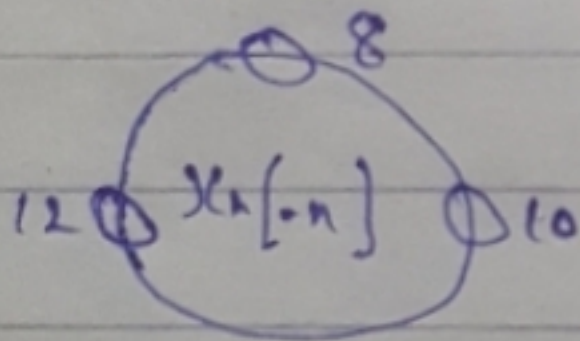
Solution

$$x_1[n] = [2, 4, 6]$$

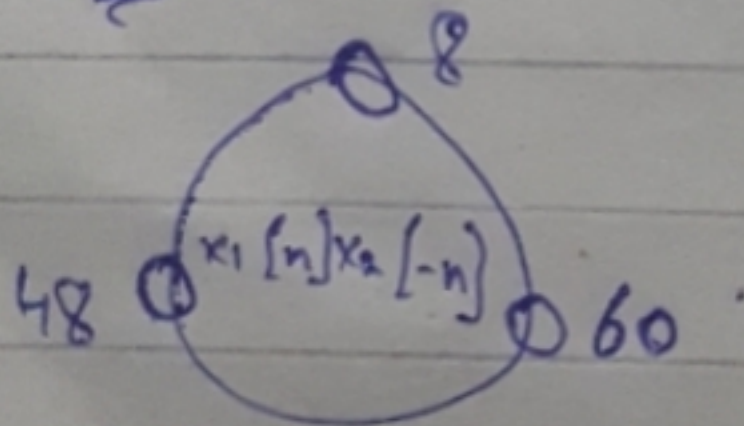
$$x_2[n] = [8, 10, 12]$$



① folding In this we take
clock wise mirror image of
one wave.

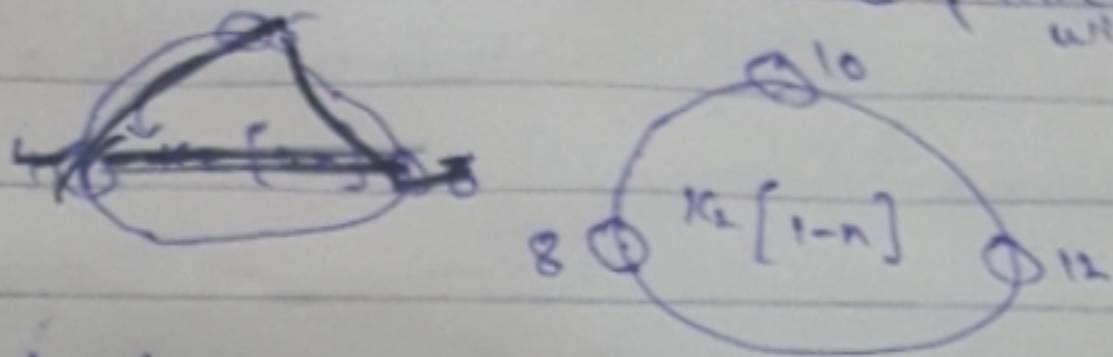


② Multiplication

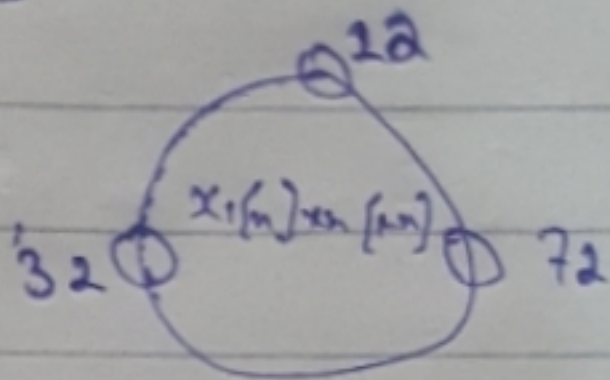


③ Sum $y(1) = 116$

* Shift the folded ~~area~~ (Anticlockwise)

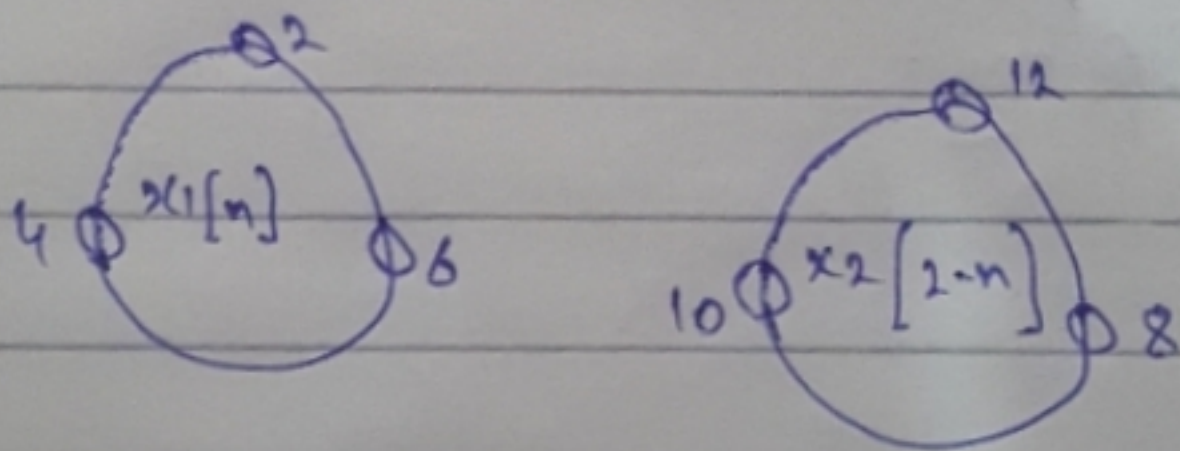


* Multiplication #

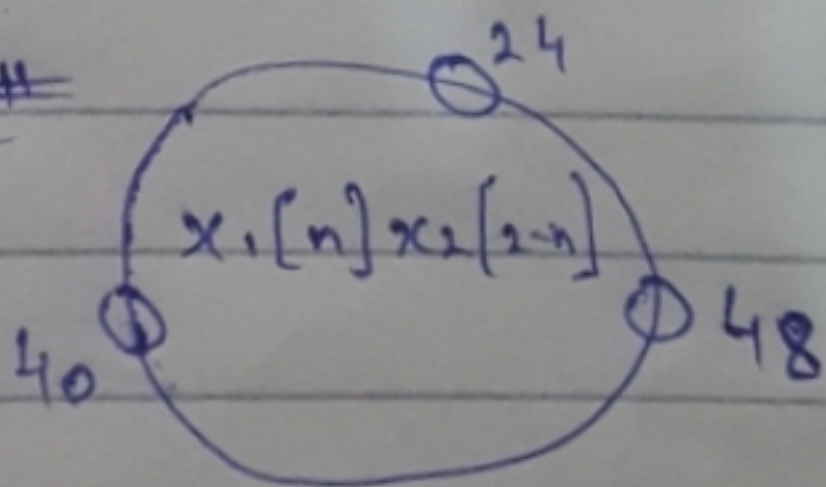


Sum = $y(1) = 116$

* Second shift #



* Multiplication #



* Sum = $y(2) = 112$

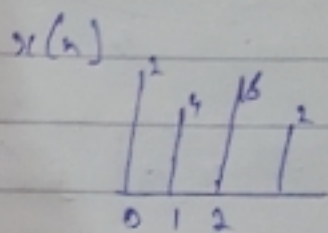
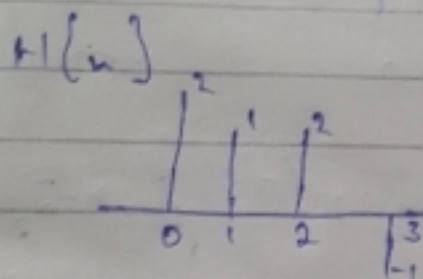
So $y[n] = \{ 116, 116, 112 \}$ (ANS)

Question. 203

Solution.

Graphical Method

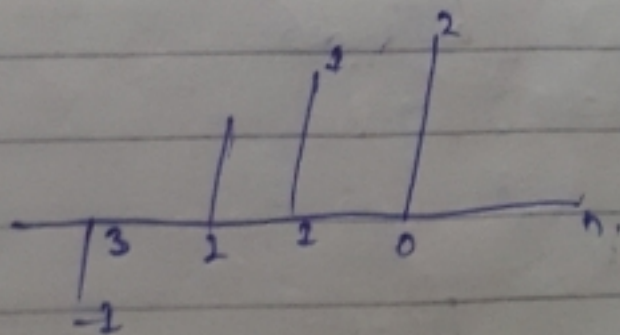
$$H[n] = \{2, 1, 2, 2\} \quad x[n] = \{2, 4, 6, 2\}$$



length of output is $4+4-1=7$

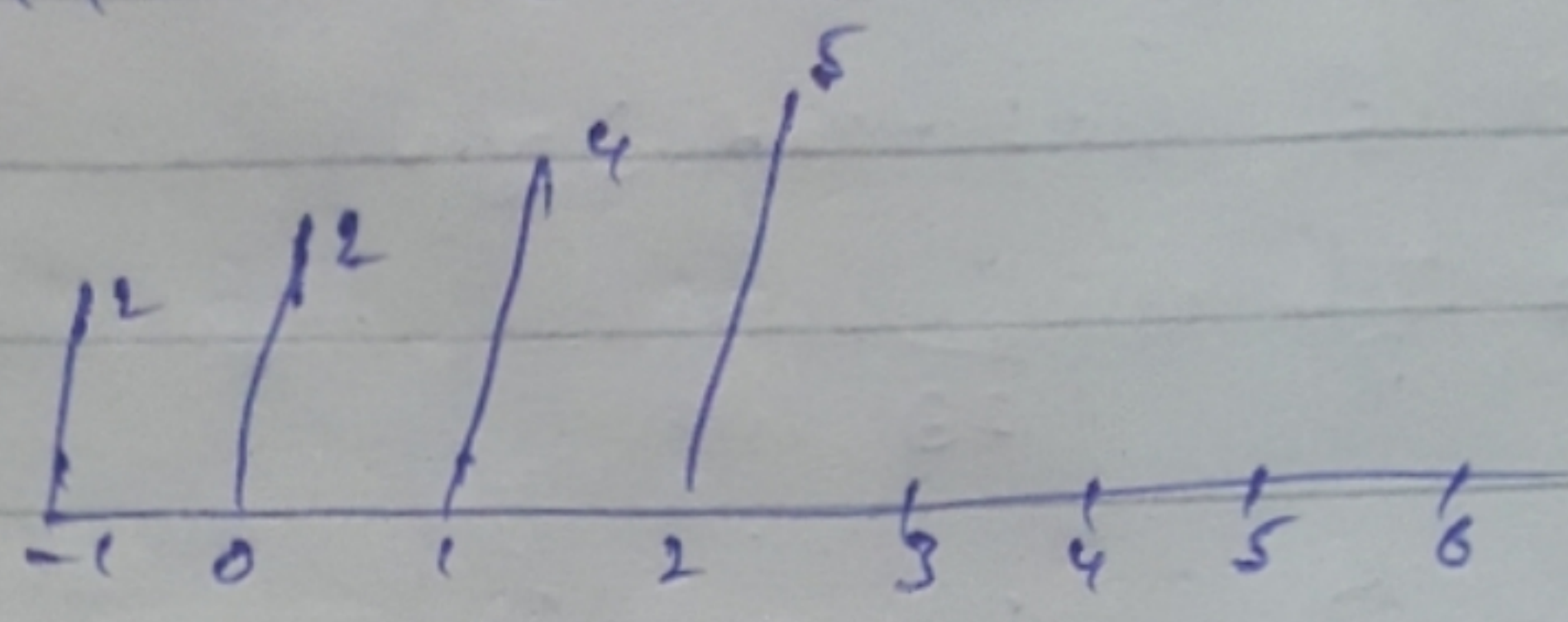
Folding any one but we fold impulse response

$H[-n]$



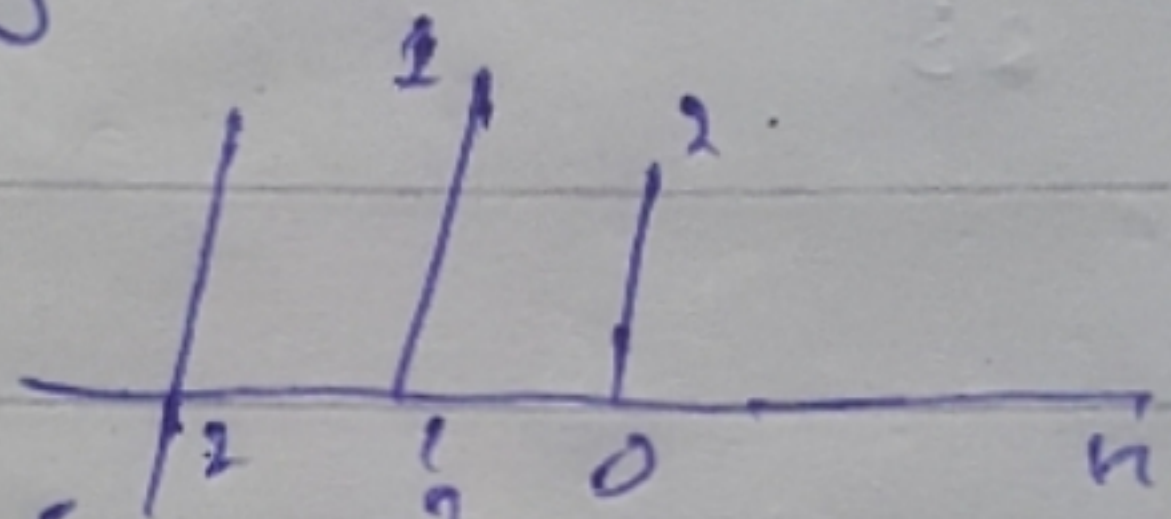
Now Product Sequence

Recall $h[-10]$

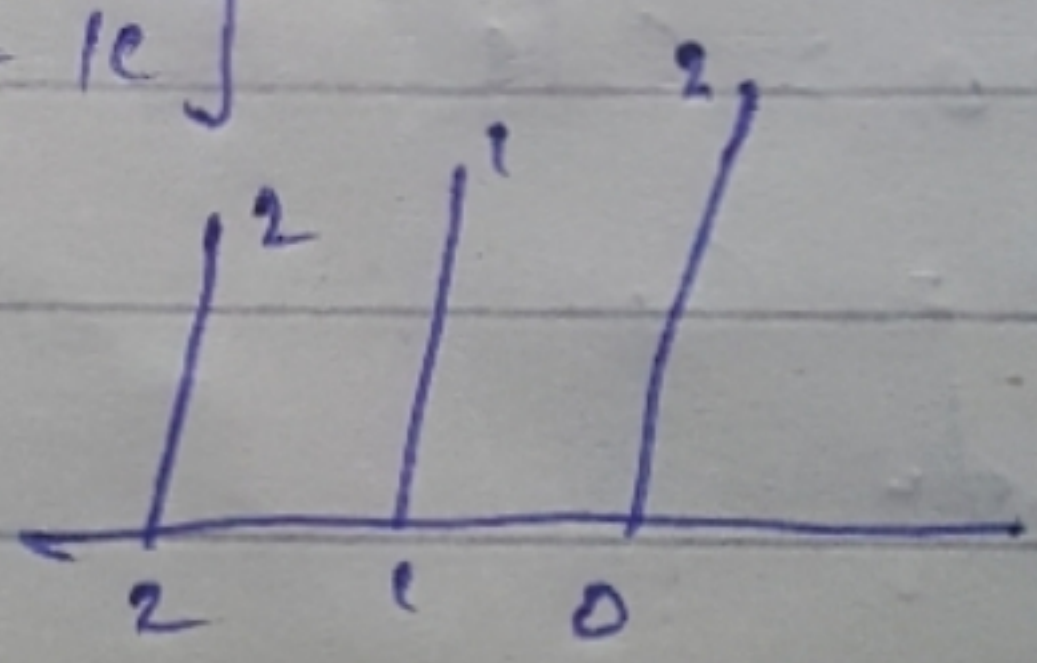


Sum $g[n] = 2 + 4 + 2 + 6 = 14$

Shifting $h[n-1] = 0$



$x[n]$ $h[n-1]$



$g[n] = 2 + 4 + 2 = 8$