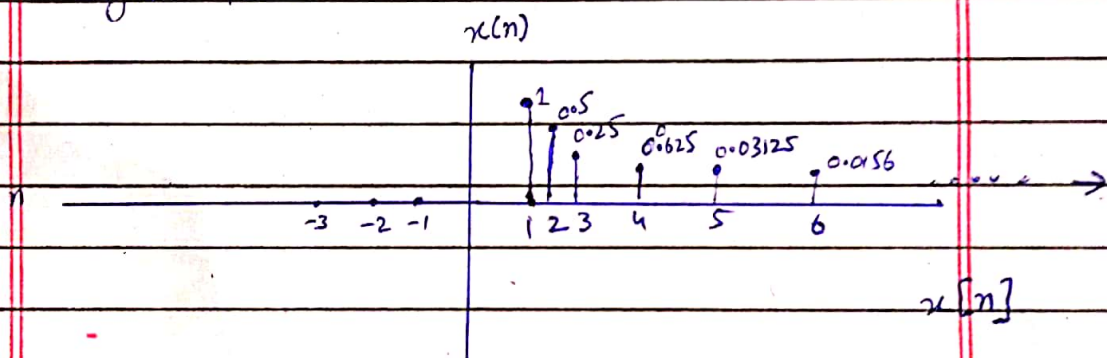


Q.#2 Compute & plot output $y[n]$ for $h[n]$ given below using convolution sum.

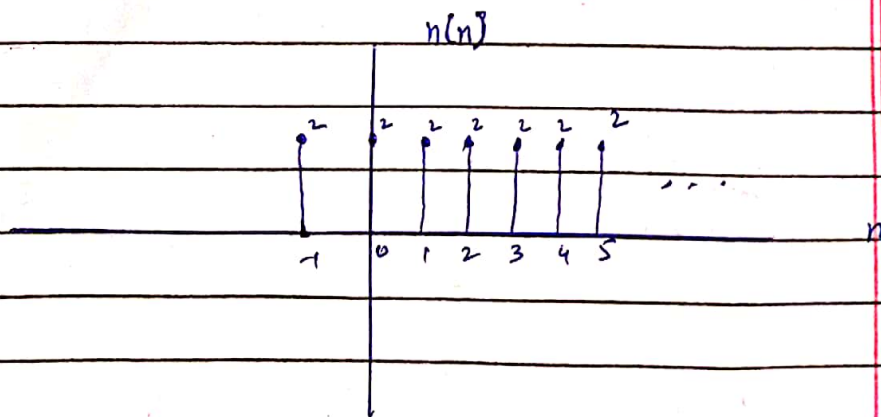
$$x[n] = \left(\frac{1}{2}\right)^{n-1} u[n-1]$$

Soln:

Signal Plot

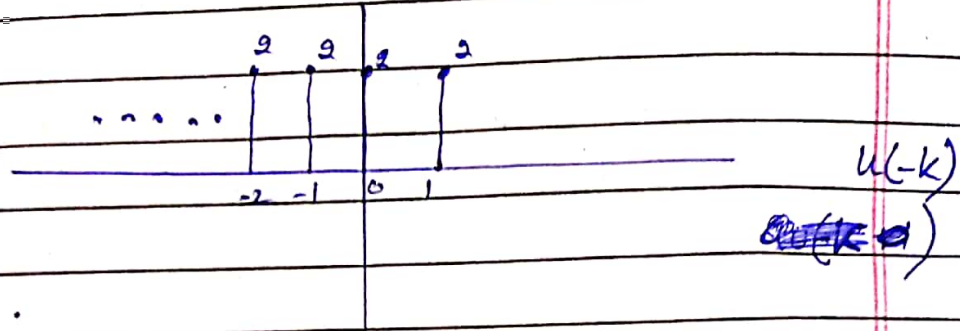


$$h[n] = 2u[n+1]$$



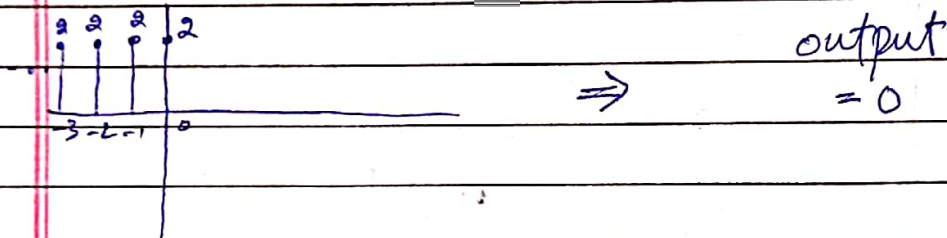
Let replace the $n \Rightarrow k$ and put $k \Rightarrow -k$ So we get.

$$\sum_{k=-\infty}^{\infty} x(k)h(-k+n)$$

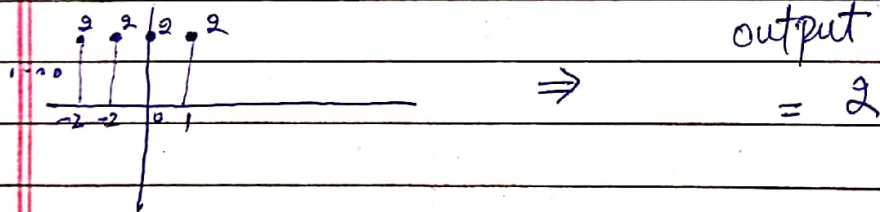


Now

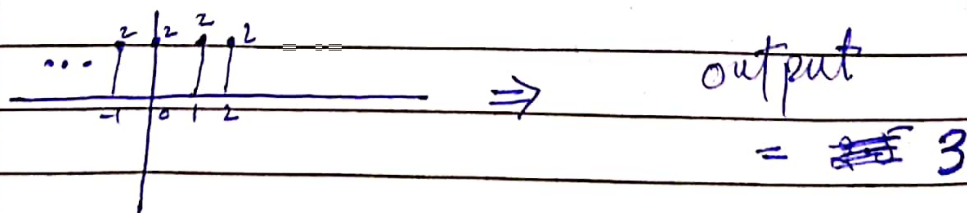
(-1) $n = -1$



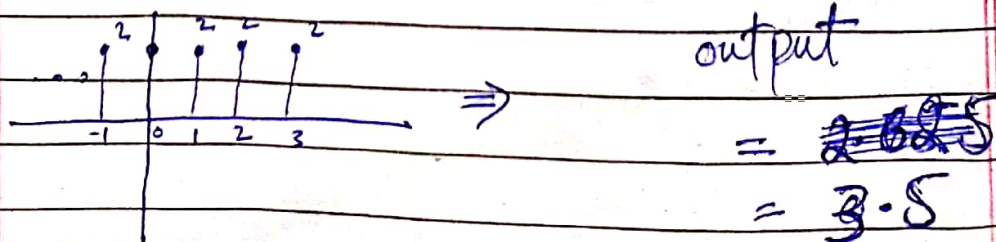
(0) $n = 0$



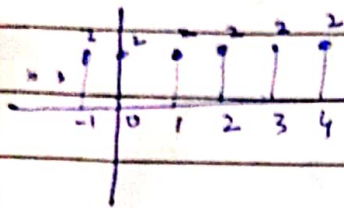
(1) $n = 1$



(2) $n = 2$



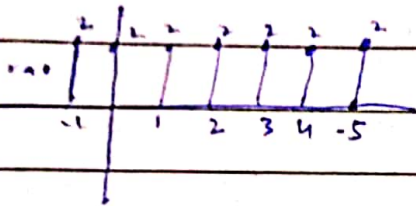
③ $n=3$



\Rightarrow

output
= 3.780

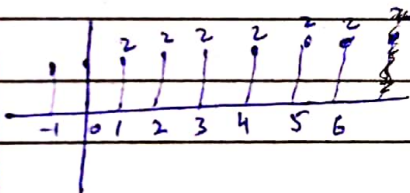
④ $n=4$



\Rightarrow

output
= 3.8100

⑤ $n=5$



\Rightarrow

output
= 3.84

Same onward

$n=6$

\Rightarrow output = 3.88

$n=7$

\Rightarrow output = 3.892 \Rightarrow 3.9

$n=8$

\Rightarrow output = 3.909 \Rightarrow 3.91

$n=9$

\Rightarrow output = 3.93 \Rightarrow 3.92

$n=10$

\Rightarrow output = 3.94 \Rightarrow 3.928

Output Signal
Final

