

# EE3900 : Gate Assignment-3

Nelakuditi Rahul Naga - AI20BTECH11029

Download all latex-tikz codes from

[https://github.com/Rahul27n/EE3900/blob/main/Gate\\_Assignment\\_3/Gate\\_Assignment\\_3.tex](https://github.com/Rahul27n/EE3900/blob/main/Gate_Assignment_3/Gate_Assignment_3.tex)

## 2 SOLUTION

We can write  $x(n)$  as follows:

$$x(n) = \frac{1}{2}\delta(n+2) + \delta(n+1) + 2\delta(n) + \delta(n-1) + \frac{1}{2}\delta(n-2)$$

We clearly have:

$$y(-2) = x(-2) = \frac{1}{2} \quad (2.0.1)$$

$$y(0) = x(-1) = 1 \quad (2.0.2)$$

$$y(2) = x(0) = 2 \quad (2.0.3)$$

$$y(4) = x(1) = 1 \quad (2.0.4)$$

$$y(6) = x(2) = \frac{1}{2} \quad (2.0.5)$$

We also have :

$$y(-1) = y(1) = y(3) = y(5) = 0 \quad (2.0.6)$$

Therefore we can write  $y(n)$  as follows:

$$y(n) = \frac{1}{2}\delta(n+2) + \delta(n) + 2\delta(n-2) + \delta(n-4) + \frac{1}{2}\delta(n-6)$$

Hence the correct answer is option (a).

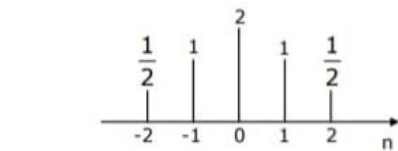


Fig. 0:  $x(n)$

The sequence

$$y(n) = \begin{cases} x\left(\frac{n}{2} - 1\right), & \text{for } n \text{ even} \\ 0, & \text{for } n \text{ odd} \end{cases}$$

is given by:

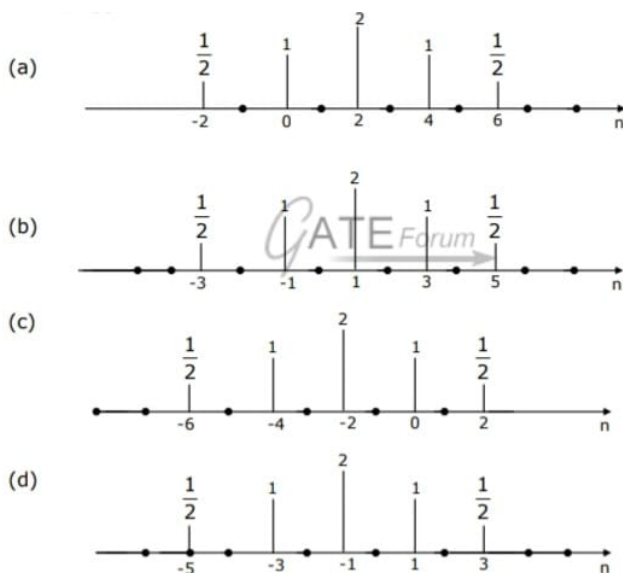


Fig. 0: Options