

NCERT DISCRETE

EE23BTECH11214 - Harsha Vardhan Paramata*

Question 10.5.4.1: Which term of the AP: 121, 117, 113, ..., is its first negative term?

Solution:

Symbol	Description	Value
$x[n]$	General term	$121 - 4n$
$x[0]$	Initial term	121
d	Common difference	4

TABLE 0
PARAMETERS LIST

$$x[n] = 121 - 4n < 0 \quad (1)$$

$$n > \frac{121}{4} \quad (2)$$

The first negative term in the sequence occurs at $n = 31$

Z-transform of this sequence:

$$X(z) = \frac{121 - 125z^{-1}}{1 - 2z^{-1} + z^{-2}}, \quad |z| > 1 \quad (3)$$

