NCERT Discrete-10.5.3-7

EE22BTECH11004 - Allu lohith

1. Find the sum of first 22 terms of an AP in which $d = 7$ and 22nd term is 149.

Ans: let the series be,

$$a_0, a_1, a_2, a_3, ..., a_n$$

Parameter	Description	Formulae/Value
a_0	First term of A.P	-
d	Commom difference	-
n	Count of terms starting from '0'	-
a_n	$(n+1)^{th}$ term of the A.P	$a_0 + nd$
a_{21}	Value of 22nd term	149
S_n	Sum of (n+1) terms in A.P	$\left(\frac{n+1}{2}\right)(2a_0 + nd)$

TABLE 0
PARAMETERS

Now, 22nd term means a_{21}, So

$$a_{21} = a_0 + nd \tag{1}$$
$$149 = a_0 + 21(7) \tag{2}$$
$$a_0 = 149 - 147 \tag{3}$$
$$a_0 = 2 \tag{4}$$

As,

$$S_n = \left(\frac{n+1}{2}\right)(a_0 + nd) \tag{5}$$

So,

$$S_{21} = \left(\frac{21+1}{2}\right)(2 \times 2 + 21 \times 7) \tag{6}$$
$$s_{21} = 11 \times 151 \tag{7}$$
$$s_{21} = 1661 \tag{8}$$

Parameter	Description	Value
a_0	First term of A.P	2
S_{21}	Sum of 22 terms in A.P	1661

TABLE 0
RESULTS