PERMUTATIONS AND COMBINATIONS - Class XI

Past Year JEE Questions

Questions

Quetion: 01

If $\frac{{}^{n+2}C_6}{{}^{n-2}C_2} = 11$, then n satisfies the equation :

A. $n^2 + 3n - 108 = 0$

B. $n^2 + 5n - 84 = 0$

C. $n^2 + 2n - 80 = 0$

D. $n^2 + n - 110 = 0$

Solutions

Solution: 01

Explanation

$\frac{{}^{n+2}C_6}{{}^{n-2}C_2} = 11$

$\Rightarrow \frac{(n+2)!}{6!\,(n-4)!} \frac{}{} 11 \cdot \frac{(n-2)!}{(n-4)!}$

$\Rightarrow$ (n + 2)! = 11.6! (n – 2)!

$\Rightarrow$ (n + 2) (n + 1) n (n – 1) = 11.6!

$\Rightarrow$ (n + 2) (n + 1) n (n – 1) = 11 . 6 . 5 . 4 . 3 . 2 . 1

$\Rightarrow$ (n + 2) (n + 1) n (n – 1) = 11 . 10 . 9 . 8

$\therefore$ n = 9

This value of n satisfy the equation,

$n^2 + 3n - 108 = 0$