Binomial Theorem - Class XI

Related Questions with Solutions

Questions

Quetion: 01

In questions below, If C_0, C_1, C_2,..., C_n are the combinatorial coefficients in the expansion of $(1 + x)^n$, n∈N, then
$C_0C_r + C_1C_{r+1} + C_2C_{r+2} +...+ C_{n-r}C_n =$

A. ${}^{2n}C_{n-r}$

B. ${}^{2n}C_n$

C. $\left({}^{2n}C_n\right)^2$

D. $\left({}^{2n}C_{n-r}\right) + 1$

Solutions

Solution: 01

$[1 + x]^n = {}^nC_0 + {}^nC_1x + {}^nC_2x^2 +...+ {}^nC_nx^n$ $[x + 1]^n = {}^nC_0x^n + {}^nC_1x^{n-1} +...+ {}^nC_0$

multiply

$[1 + x]^{2n} = [{}^nC_0 + {}^nC_1x +...+ {}^nC_nx^n]$ $[{}^nC_0x^n +...+ {}^nCn]$

${}^nC_0{}^nC_r + {}^nC_1{}^nC_{r+1} +...+ {}^nC_{n-r}{}^nC_n =$

coefficient of x^{n-r} in $[1 + x]^{2n} = {}^{2n}C_{n-r}$

Correct Options

Answer:01

Correct Options: A