Binomial Theorem - Class XI

Past Year JEE Questions

Questions

Quetion: 01

The coefficients of x^p and x^q in the expansion of $(1+x)^{p+q}$ are

A. equal

B. equal with opposite signs

C. reciprocals of each other

D. none of these

Solutions

Solution: 01

Explanation

Here in this expansion $(1+x)^{p+q}$

The general term = $T_{r+1} = {}^{p+q}C_r . (x)^r$

$\therefore$ x^p will be present in the term = ${}^{p+q}C_p . (x)^p$

So coefficient of x^p = ${}^{p+q}C_p$

And x^q will be present in the term = ${}^{p+q}C_q . (x)^q$

$\therefore$ coefficient of x^q = ${}^{p+q}C_q$

We know ${}^nC_r = {}^nC_{n-r}$

$\therefore$ ${}^{p+q}C_q = {}^{p+q}C_{(p+q)-q} = {}^{p+q}C_p$

So coefficients of x^p and x^q are equal.