Brainbox learn easy

Chapter 07

PERMUTATIONS AND COMBINATIONS

COMBINATIONS:

Combination means selection. The number of combinations of ‘n’ objects taken ‘r’ at a time is,

$$^{n}C_{r} = \binom{n}{r} = \frac{n(n-1)(n-2).....(n-r+1)}{r!} = \frac{^{n}P_{r}}{r!} = \frac{n!}{r!(n-r)!}.$$

EXAMPLE:

Find the number of combinations of 5 objects a, b, c, d, e taken 2 at a time.

SOLUTION:

$$\text{Required number} = \binom{5}{2} = \frac{5!}{2!(5-2)!} = \frac{5!}{2!3!}$$

$$= \frac{5\times 4\times \cancel{3!}}{2!\ \cancel{3!}} = \frac{5\times \cancel{4}^{2}}{1\times \cancel{2}} = 10.$$