① There is an unlimited stock of blue, red, white and grey coloured balls. The balls of each colour are identical. Find the number of ways of selecting 12 balls from the stock?

Ans:- Here we need Maximum 12 blue ~~red~~ balls, 12 white balls, 12 ~~blue~~ red balls and 12 grey balls to have all selection of 12 balls.

Red + blue + white + grey = 12

The integral soln of $x_1 + x_2 + \cdots + x_n = n$ is given by $n+n-1 C_{n-1}$.

∴ Number of ways = $^{12+4-1}C_{4-1}$

$= {}^{15}C_3$

$= \frac{1307674368000}{479001600 \times 6}$

$= \frac{1307674368000}{2874009600}$

$= 455$ (Ans.)