Hyper Geometric distribution:-

A r.v x is said to follow the hyper geometric distribution if its p.m.f is given by

$$p(x) = P(X=x) = \begin{cases} \dfrac{{}^{M}C_{x}\ {}^{N-M}C_{n-x}}{{}^{N}C_{n}}, & x = 0, 1, \ldots \min(n, M) \\ 0 & \text{otherwise} \end{cases}$$

* Mean $= \mu = \dfrac{nM}{N}$

Variance $= \sigma^2 = \dfrac{nM(N-M)(N-n)}{N^2(N-1)}$

If $\min(n, M) = n$.

$= x =$

Problem:-

A bag contains 4 white balls and 3 green balls. Three balls are drawn. What is the probability that 2 are white

Solution:- $N = 4+3 = 7$

$M = 4, \quad n = 3$

x = Number of white balls

$$P(x=2) = \frac{{}^{4}C_{2}\ {}^{3}C_{1}}{{}^{7}C_{3}} = \frac{18}{35}$$

$= x =$