**5. We wish to select 6 persons from 8, but if the person A is chosen, then B must be chosen. In how many ways can selections be made?**

**Solution:**

We know that,

$$^nC_r$$

$$= \frac{n!}{r!(n-r)!}$$

According to the question,

Case 1:

If both A and B are selected $= 1 \times 1 \times {^6C_4}$

$$= \frac{6!}{4!\,(6-4)!} = \frac{6!}{4!\,2!} = 15$$

Case 2:

If neither A nor B are selected $= {^6C_6} = 1$

If B is selected but A is not selected $= 1 \times {^6C_5}$

$$= \frac{6!}{5!\,(6-4)!} = 6$$

Adding the results of both A and B being selected, neither A nor B being selected and B being selected but A not being selected,

We get,

15+1+6=22