

## Conditional Combinations.

(1) The number of ways in which  $r$  objects can be selected from  $n$  different objects if  $k$  particular objects are

(i) Always included =  ${}^{n-k}C_{r-k}$       (ii) Never included =  ${}^{n-k}C_r$

(2) The number of combinations of  $n$  objects, of which  $p$  are identical, taken  $r$  at a time is

=  ${}^{n-p}C_r + {}^{n-p}C_{r-1} + {}^{n-p}C_{r-2} + \dots + {}^{n-p}C_0$  if  $r \leq p$  and

=  ${}^{n-p}C_r + {}^{n-p}C_{r-1} + {}^{n-p}C_{r-2} + \dots + {}^{n-p}C_{r-p}$  if  $r > p$