Calculation of Microstates for Various Configuration :—

p^2 — $n=6$, $r=2$

No. of microstates $= \binom{n}{r} = \frac{n!}{r!(n-r)!}$

$= \binom{6}{2} = \frac{6!}{2!(6-2)!}$

$= \frac{6\times5\times(4\times3\times2\times1)}{2\times1(4\times3\times2\times1)}$

$= \frac{30}{2} = 15$

d^1 — $n=10$, $r=1$

No. of microstates $= \binom{n}{r} = \frac{n!}{r!(n-r)!}$

$= \frac{10!}{1!(10-1)!}$

$= \frac{10\times9\times8\times7\times6\times5\times4\times3\times2\times1}{1\times(9\times8\times7\times6\times5\times4\times3\times2\times1)}$

$= \frac{10}{1} = 10$

d^2 — $n=10$, $r=2$

No. of microstates $= \binom{n}{r} = \frac{n!}{r!(n-r)!}$

$= \frac{10}{2(10-2)!}$

$= \frac{10\times9\times8\times7\times6\times5\times4\times3\times2\times1}{2\times1\times8\times7\times6\times5\times4\times3\times2\times1}$

$= \frac{90}{2} = 45$