(4)

(1) How many words can be formed from the word's letter "MOON" ; "CONDITIONAL".

s/ ① MOON :

1 M ,

2 O's ,

1 n ,

∴ $n = 4$, $r_1 = 1$, $r_2 = 2$, $r_3 = 1$

∴ no. of words = no. of per. $= \frac{4!}{1!\,2!\,1!} = \frac{4.3.\cancel{2!}}{\cancel{2!}} = \boxed{12}$

H.W.

2) Conditional

1 C ,

2 O's ,

2 n's ,

1 d ,

2 i's ,

1 T ,

1 a ,

1 L ,

∴ no. of per. $= \frac{11!}{1!\,2!\,2!\,1!\,2!\,1!\,1!\,1!} = \frac{11.10.9.8.7.6.5.4.3.\cancel{2!}}{\cancel{2!}\,\cancel{2!}\,\cancel{2!}}$

$= \boxed{}$

Rule (2)

The number of permutation of (n) different objects about a Circle

no. of arrange $(n-1)!$

EX(1) How many Can be sit five persons about round table (round form).

sol no. of per. $= (n-1)! = (5-1)! = 4! = 4.3.2.1 = \boxed{24}$

EX(2) Find the Value of (n) if $P_2^n = 12$

sol $P_r^n = \dfrac{n!}{(n-r)!}$

$$P_r^n = \frac{n!}{(n-r)!} = 12$$

$$\frac{n(n-1)\cancel{(n-2)!}}{\cancel{(n-2)!}} = 12 \Rightarrow n(n-1) = 12$$

$$n^2 - n - 12 = 0$$

$$\Rightarrow (n-4)(n+3) = 0 \Rightarrow \boxed{n=4} \text{ or } \boxed{n=3}$$

Q) Find the Value of n if $\boxed{P_4^{n-1} = \frac{1}{5} P_5^n}$ H.w.

EX(3) How many 4-digits number can be formed from the digits 1, 3, 5, 6, 7, 8 ? How many of them are odd? How many of them are even ? How many of them are greater than 5000 ? How many of them less than 4000 ? How many of them divided on (5) ?

sol 1. no. of Per. $= P_4^6 = \dfrac{6!}{(6-4)!} = 360$

without repetition

1- $\boxed{6}\boxed{5}\boxed{4}\boxed{3} = 6.5.4.3 = 360$

2- $\boxed{5}\boxed{4}\boxed{3}\boxed{4} = 240$

3- $\boxed{5}\boxed{4}\boxed{3}\boxed{2} = 120$

4- $\boxed{4}\boxed{5}\boxed{4}\boxed{3} = 240$

5- $\boxed{2}\boxed{5}\boxed{4}\boxed{3} = 120$

6- $\boxed{5}\boxed{4}\boxed{3}\boxed{1} = 60$

with repetition

1- $\boxed{6}\boxed{6}\boxed{6}\boxed{6} = 6^4 = 1296$

2- $\boxed{6}\boxed{6}\boxed{6}\boxed{4} = 86$

3- $\boxed{6}\boxed{6}\boxed{6}\boxed{2} = 432$

4- $\boxed{4}\boxed{6}\boxed{6}\boxed{6} = 86$

5- $\boxed{2}\boxed{6}\boxed{6}\boxed{6} = 43$

6- $\boxed{6}\boxed{6}\boxed{6}\boxed{1} = 21$

note: prove : $0! = 1$

Proof: $\because n! = n(n-1)!$

let : $n = 1$; $\therefore 1! = 1(1-1)! = 1.0! = 0! = 1$; $\therefore \boxed{0! = 1}$