* Permutation *

means of formulation is "arrangement"

we are giving a team subject M, R, E

M, R, E → total → 3

RME MRE EMR
REM MER ERM
> total way 6

or $3! \rightarrow 3 \times 2 \rightarrow 6$

M R E

3 · 2 · 1 ⇒ 3×2×1 → 6

Choice Choice Choice

Ex:→ 1, 2, 3, 4 → two digit no (no repetition)

4 − 1 → 3

4 3 ⇒ 4×3 = 12

Choice Choice

Ex:→ 1, 2, 3, 6, 7, 8, 9 → four digit no.

i) can not repeat

ii) can repeat

Soln:→ i) four digit total no → 7

7 × 6 × 5 × 4 → 840 ways

ii)

7 × 7 × 7 × 7 → 2401 ways

Q1 → 1, 2, 3, 6, 7, 8, 0 → total no → 7

find no. of ways. four digit

i) not repeat

ii) can repeat

Sol^{n} :→ i) 6 × 6 × 5 × 4 → 720 ways

total → 7, but never consider 0 at first place then total no → 6

now for next 0 will consider total 7

1 → choice, now left with 6.

ii) 6 × 7 × 7 × 7 ⇒ 2058

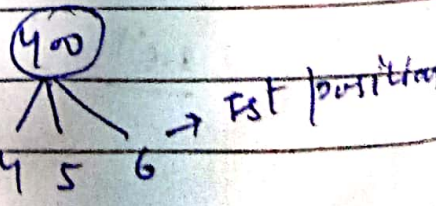
(42) (49)

42(80 − 1)
2100 − 42
2058

Cz '0' not consider at first place

now total no. is 7

Q 2, 3, 4, 0, 5, 6 → 3 digit no greater than 400. (can not repeat)



3 × 5 × 4 → (60) Ans

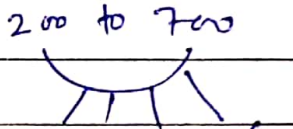
total no. → 6

Q1 → 1, 4, 3, 0, 5, 6 → 3 digit no. b/w 200 to 700.

sol² point :→

b/w → 201 – 699

from → 200 – 700



4 × 5 × 4 ⇒ (80) Ans

~~total~~ no → 6 – 1 → 5

Q2 → 1, 2, 3, 4, 5, 6 → four digit no which is divisible by 5.

Sol⁴ :→ 1, 2, 3, 4, 5, 6

start from right

(0/5)

5 × 4 × 3 × 1 ⇒ (60) Ans

~~total~~ → 6 – 1 ⇒ (5)

Q → 0, 1, 2, 3, 4, 5, 6 → four digit which is divisible by 5.

Sol → when 0 present also uncertainity, use both case

6 × 5 × 4 × 0

total → 7 – 1

⇒ 6 total way

(120)

120 + 100

220 Ans

5 × 5 × 4 × 5 ⇒ (100)

total → 6, but 0 nus place first then 6 – 1 → 5 choice

now include 0 for next position.

5 → choice

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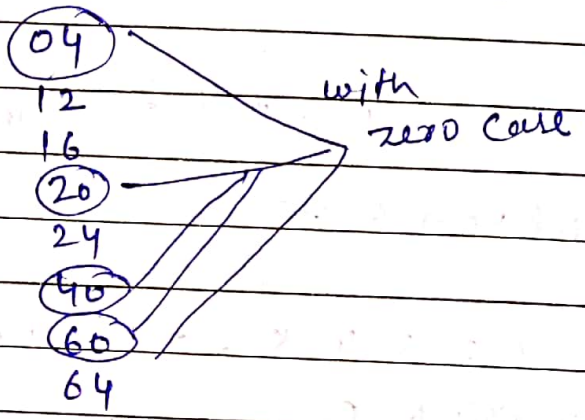
Q:→ 2, 1, 0, 4, 6 → four digit no.
which is divisible by 4.

Sol for last two digit must divisible by 4.



04/20/40/60

3. 2. — — 4

24

12/16/24/64.

2. 2. — — 4

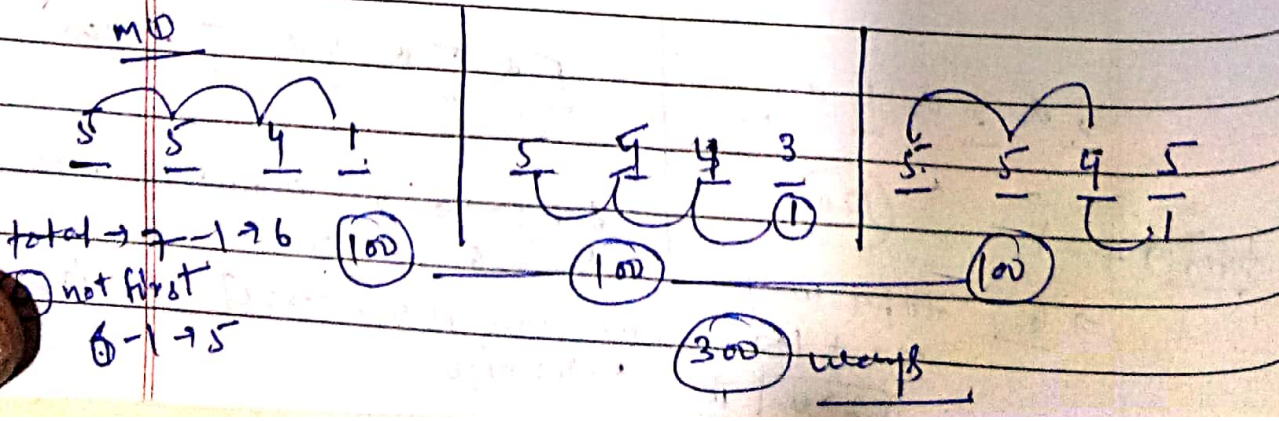
16

24+16 → 40 ways Ans

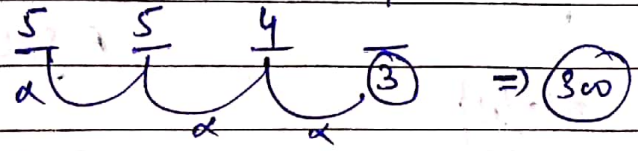
Q:→ make four digit odd no.

0, 1, 2, 3, 4, 5, 6

Sol for odd no. last digit → 1, 3, 5



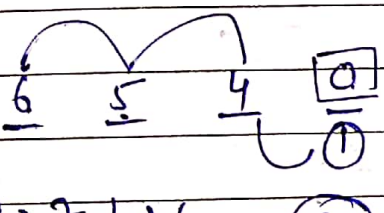
M(2) !→ 1/3/5



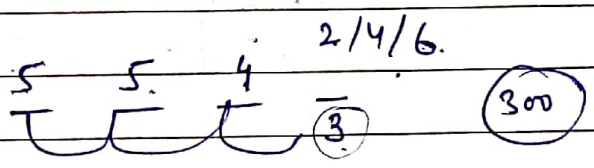
Q!⇒ make four digit even no.

0, 1, 2, 3, 4, 5, 6

even → 0/2/4/6



total → 7-1 → 6 (120)



total → 7, '0' first place nhi.

7-1 → 6 6-1 → 5

total way → 120 + 300 → 420 Ans.

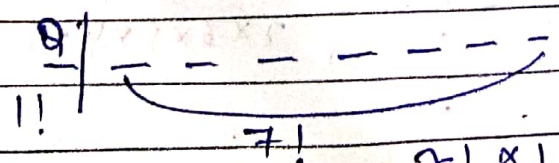
Q!→ In how many way we can arrange

i)

EQUATION

sol^n → 8! → 8×7! → 8×5040

ii) if start letter Q.



7! × 1 → 5040 × 1 → 5040

iii) if start with consonants.

EQUATION

Q/T/N | _ _ _ _ _ _ _
3

7!

⇒ 7! × 3

⇒ 5040 × 3 ⇒ 15120 Ans

iv) if start with vowel

EQUATION

E/U/A/I/O | _ _ _ _ _ _ _
5

7!

7! × 5 → 5040 × 5 ⇒ 25200 Ans

v) if start with consonants & end with vowel.

Q/T/N | _ _ _ _ _ _ | E/U/A/I/O
3 | 6! | 5

⇒ 6! × 3 × 5 → 720 × 15 ⇒ 10800 Ans

Q! → arrange BANKING

$$\Rightarrow \frac{7!}{2!} \Rightarrow 7 \times 6 \times 5 \times 4 \times 3 \rightarrow 2520$$

Q1 → ASSASSINATION

all 'S' are together.

total S → 4 (make 1)

ASASINATION ⇒ $\frac{10!}{3! \times 2! \times 2!}$

⇒ 151200 Ans

Q1 → MATHEMATICS → arrange, all consonants together.

n = 11

Con → 7 (M=2, T=2)

Vow → 4 (A=2)

M	T	H	M	T	C	S	A	E	A	I
						5	4	3	2	1

$\frac{5! * 7!}{2! 2! 2!}$ ⇒ 75600 Ans

Q2 UNIVERSITY

i) all vowels together

ii) all vowels not together.

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i) $n=10, \quad r=4 \ (i=2)$.

u i i e	r r n s t y
7	6 5 4 3 2 1

$\frac{7! \times 4!}{2!} \Rightarrow 5040 \times 4 \times 3 \Rightarrow \underline{60480}$ Ans

ii) $\frac{10!}{2!} = \underline{1814400} \rightarrow$ Total arrangement

Total − together

$1814400 - 60480 \Rightarrow 1753920$

Q:→ 7 → students (total)
2 → Math
5 → other subject
In which manner they sit by which math student never sit together.

X S X S X S X S X S X
(gaps 1 2 3 4 5 6; S: 1 2 3 4 5)

or
$7! - (6! \times 2)$
$6!(7-2)$
$720 \times 5 = \underline{3600}$

$^6P_2 \times 5! \Rightarrow 6 \times 5 \times 120 \Rightarrow \underline{3600}$ Ans

Q:→ 2, 3, 0, 3, 4, 2, 3
$n=7$
3's → 3 time
2's → 2 time

10 Lakh से बड़ी कितनी संख्या बनेगी

with 7 no. $\frac{7!}{3!2!}$

but no. never start with 0 then n = 6

$\frac{6!}{3!2!}$

$\frac{7!}{3!2!} - \frac{6!}{3!2!} \Rightarrow \frac{6!}{3!2!}(7-1)$

$\frac{6 \times 5 \times 4}{2} \times 6 = 360$ Ans

Q1 → 6 → men sit on circular table but 2 female never sit together.

3 → female

6 men $\xrightarrow{\text{Cir. table}}$ 6-1! => 5!

${}^{6}P_{3} \times 5! \Rightarrow 6 \times 5 \times 4 \times 120 \Rightarrow 14400$ Ans

Q1 → 0, 1, 2, 3, 4, 5 five digit which divisible by 3.

1st → 1, 0, 2, 4, 5.

IInd → 1, 2, 3, 4, 5

for 1st $\underline{4} \times \underline{4} \times \underline{3} \times \underline{2} \times \underline{1} \Rightarrow 96$

for IInd $\underline{5} \times \underline{4} \times \underline{3} \times \underline{2} \times \underline{1} \Rightarrow 120$

$96 + 120 = 216$ Ans

"Some Question on Permutation"

Q1.→ How many words of 11 letters could be formed with all the vowels at even places, using all the letters of alphabet (not repetitions)

1 A 2 E 3 I 4 O 5 U 6

1 (2) 3 (4) 5 (6) 7 (8) 9 (10) 11

total → 26 - 5 → (21)

$^{21}P_6 \times 5!$ Ans

Q1.→ How many 7-digit no. are there having the digit 3 three times & the digit 0 four time.

one place ← (3)

1 _ _ _ _ _ _ 6

3 and → (2)

0 → 4

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

Q1.→ In how many ways can a person send invitation card to 6 of his friend if he has four servants to distribute the cards.?

Soln 4 → Servant, 6 → Friend

no. of way → 4^6 Ans