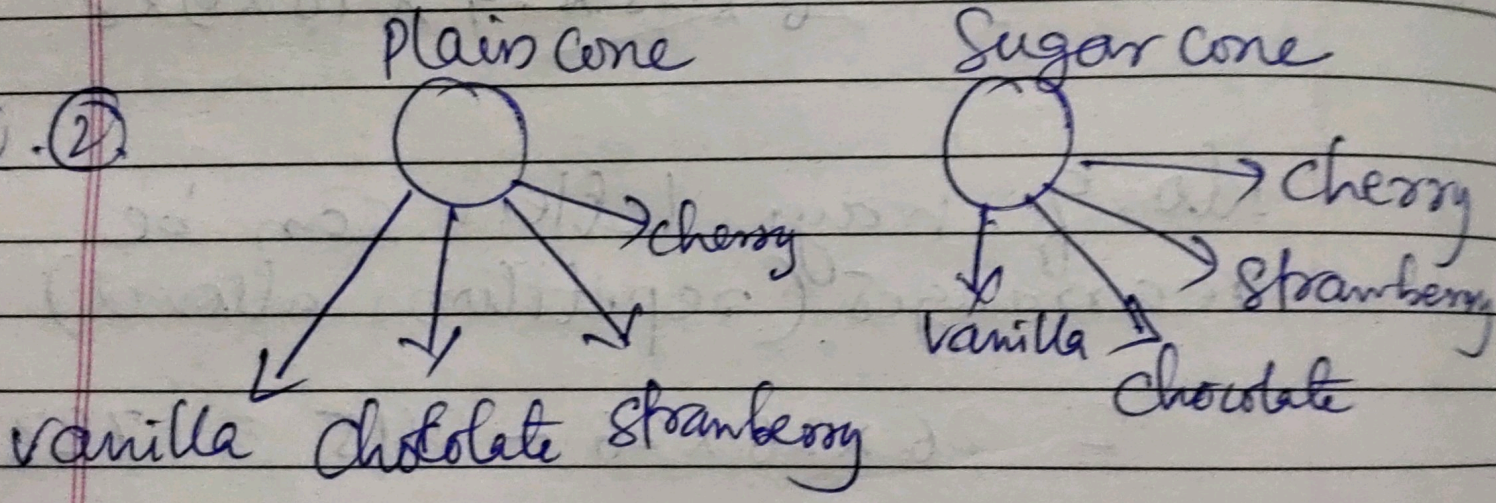
Q. (1) (a) $\frac{65!}{64! \times 5} = \frac{65 \times 64!}{64! \times 5}$

$= 13$

(b) $\frac{71!}{72!} = \frac{71!}{72 \times 71!} = \frac{1}{72}$

Q. (2)



There are total 8 choices from which a customer can select.

Q. (3) (a) Number of members = 12

⇒ Number of ways the members could line up for a photo

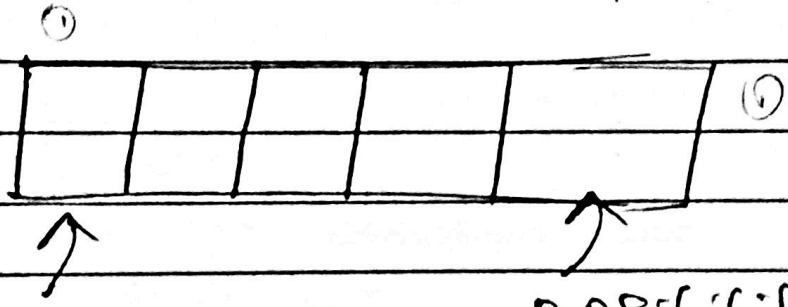
$= 12!$

(5) The chairperson, treasurer & secretary can be chosen in

$^{12}C_3$ ways

(4) 2 3 0 5 4 1 6.

(a) For an odd number, the number must end with 1, 3, 5, 7, 9



possibilities → 1, 3, 5.

6 All except 0.

The (a) unit place has 3 possibilities while the 1st digit must not be equal to zero

⇒ No of digits possible

$= 5 \times 5 \times 4 \times 3 \times 3$

$= 900$ Ans

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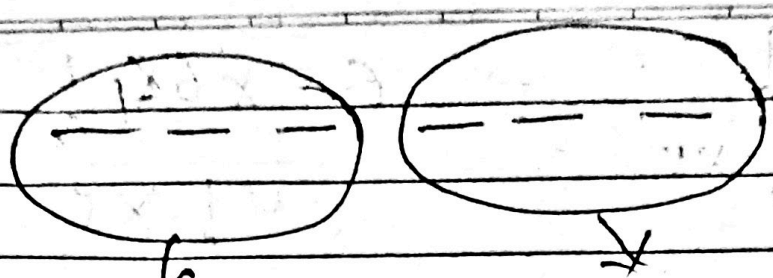
Q.5)



letters
Total → 26

digits.
total - 10

~~Total possible arrangements (without repetition)~~
$= 26 \times 25 \times 24 \times 10 \times 9 \times 8.$

No. of ways letters can be rearranged (repetitions allowed)

$= 26 \times 26 \times 26 - 245 = 17331.$

No of ways digits can be arranged (repetitions allowed)

$= 10 \times 10 \times 10 = 1000.$

Total possible arrangements

$= 17331000.$

Q.6 THURSDAY → 8 letters

(a) No. of arrangements possible

$= 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$

$= 8! = 40,320.$

(b) T & H must be side by side

⇒ T _ _ _ _ _ _ H

⇒ Total arrangements =

TH can be considered as a single letter. Total letters = 7

⇒ $7! \times 2! = 10,080.$

(c) T - first Y - last

⇒ T _ _ _ _ _ Y.

⇒ arrangements possible = $6!$

$= 720.$

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(7.) Permutations of word

FANTASIA

↳ Total 8 words.

$$= \frac{8!}{3!} = 6720 \text{ Ans}$$

↳ A repeated 3 times.