



#### Permutations Ex 16.5 Q6

There are 6 letters in the word 'MUMBAI' out of which 2 are M's and the rest are all distinct.

Considering both M's together and treating as one letter we have 5 letters. These 5 letters can be arranged in  $5!$  ways.

$$\begin{aligned}\text{Hence, the total number of arrangement} &= 5! \\ &= 5 \times 4 \times 3 \times 2 \times 1 \\ &= 120\end{aligned}$$

#### Permutations Ex 16.5 Q7

Total number of digits are = 7

There are 4 odd digits 1,1,3,3 and 4 odd places {1,3,5,7}

So, odd digits can be arranged in odd places in  $\frac{4!}{2! 2!}$  ways

The remaining 3 even digits 2,2,4 can be arranged in 3 even places in  $\frac{3!}{2!}$  ways.

$$\text{Hence, the total number of Numbers} = \frac{4!}{2! 2!} \times \frac{3!}{2!} = \frac{4 \times 3 \times 2!}{2! 2!} \times \frac{3 \times 2!}{2!} = 18$$

#### Permutations Ex 16.5 Q8

Total number of red flags = 4

Total number of white flags = 2

Total number of green flags = 3

We have to arrange 9 flags, out of which 4 are of red, 2 are white and 3 are green

$$\text{So, total number of signals} = \frac{9!}{4! 2! 3!}$$

$$= \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4!}{4! \times 2 \times 3 \times 2} = 9 \times 4 \times 7 \times 5 = 1260$$

Hence, total number of signals = 1260.

#### Permutations Ex 16.5 Q9

Total number of digits = 4

$$\text{Total number of 4 digit numbers} = \frac{4!}{2!}$$

But, zero cannot be first digit of the four digit numbers.

$$\therefore \text{Total number of 3 digit numbers} = \frac{3!}{2!}$$

$$\begin{aligned}\therefore \text{Total number of numbers} &= \frac{4!}{2!} - \frac{3!}{2!} = \frac{4 \times 3 \times 2!}{2!} - \frac{(3 \times 2!)}{2!} \\ &= 12 - 3 = 9\end{aligned}$$

Hence, total number of four digit numbers = 9

\*\*\*\*\* END \*\*\*\*\*