PROBABILITY

DIVYA SAI - FWC22094

16.4.10 [1]**The number lock of a suitcase has 4 wheels each labelled with ten digits i.e. from 0 to 9.The lock opens with a sequence of four digits with no repeats.What is the probability of a person getting the right sequence to open the suitcase?**

Solution:

Let,the wheels be $X = \{0, 1, 2, 3\}$ and the digits be $Y = \{0, 1, 2...9\}$. There are 10 digits out of which 4 digits are to be chosen with no repeats Possible placement of digits are,

$$^{10}P_4 = \frac{10!}{(10-4)!} = \frac{10!}{6!} = \frac{10 \times 9 \times 8 \times 7 \times 6!}{6!} = 5040 \qquad (16.4.10.1)$$

Let A be the event the correct sequence is selected So,n(A)=1.

Probability of correct sequence is selected as P(A),

$$P(A) = \frac{n(A)}{n(s)} = \frac{1}{5040} \qquad (16.4.10.2)$$

The probability of getting the right sequence to open the suitcase is $\boxed{\frac{1}{5040}}$

[1]Read question numbers as (CHAPTER NUMBER).(EXERCISE NUMBER).(QUESTION NUMBER)