Career Advancement week 7 long descriptive

1. In how many ways can 5 digits even numbers be formed the digit using 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 such that none of the digit being repeat?

Solution:

We have the numbers 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9

We will form the 5 digit even numbers

Hence even numbers are 0, 2, 4, 6, 8,

Case1: We take 0 as unit place

The numbers can be formed in

_ _ _ _ 0 = 9*8*7*6*1

Case2: we take 2 as unit place

The numbers can be formed in

_ _ _ _ 2 = 8*8*7*6*1

1^{st} can be filled in 8 ways because 0 cannot filled in 1^{st} place

Case3: we take 4 as unit place

The number can be formed in

_ _ _ _ 4 = 8*8*7*6*1

Case4: we take 6 as unit place

The number can be formed in

_ _ _ _ 6 = 8*8*7*6*1

Case5: we take 8 as unit place

The number can be formed in

_ _ _ _ 8 = 8*8*7*6*1

The answer will (9*8*7*6*1) + 4(8*8*7*6*1)

= 3024 + 10752

=13776

2. In how many ways can the letters of the word “ACTION” such that.

(a) All the vowels are together

(b)Vowels never together

SOLUTION:

The word ACTION can be arranged in 6! Ways

$$=6! = 6*5*4*3*2*1 = 720$$

(a)T he given word is ACTION

This word has 3 vowels i.e. A, I, O

Consider (A, I, O) = X

The letter can be arrange in

XCTN = 4!

$=4!*3!$

$= 4*3*2*1*3*2*1$

$=144$

(b) Here we found that the vowels never come together

Then the arrangement

=Total arrangements – always together

=720 – 144

=576