PERMUTATIONS AND COMBINATIONS - Class XI

Past Year JEE Questions

Questions

Quetion: 01

If the four letter words (need not be meaningful) are to be formed using the letters from the word "MEDITERRANEAN" such that the first letter is R and the fourth letter is E, then the total number of all such words is :

A. $\frac{11!}{(2!)^5}$

B. 110

C. 56

D. 59

Solutions

Solution: 01

Explanation

Here total no of different letters present are,

(1) One M

(2) Three E (E E E)

(3) One D

(4) One I

(5) One T

(6) Two R (R R)

(7) Two A (A A)

(8) Two N (N N)

In the four letter word first letter is R and last letter is E.

$\therefore$ Word is = R _ _ E

Now remaining letters are,

M, EE, D, I, T, R, AA, NN

Those 2 empty places can be filled with identical letters [EE, AA, NN] in 3 ways.

Or two empty places can be filled with distinct letters [M, E, D, I, T, R, A, N] in ${}^8C_2 \times 2!$ ways.

$\therefore$ Total no of words = $3 + {}^8C_2 \times 2! = 59$