

Question # 3: [05 Marks]

(a) There are five available flights from Karachi to Lahore and, regardless of which of these flights is taken, there are seven available flights from Lahore to Peshawar. In how many ways can a person fly from Karachi to Lahore to Peshawar?

Solution:

There are five ways to make the first part of the trip and seven ways to continue on with the second part of the trip, regardless of which flight was taken for the first leg of the trip. Therefore, by the product rule there are $5 \times 7 = 35$ ways to make the entire trip.

(b) How many anagrams (permutations of letters) are there for word "Education"?

Solution:

Since answer has 6 different letters so there are ${}^9P_9 = 9! = 362880$ anagrams.

Question # 4: [05 Marks]

How many ways are there to choose a committee of size five consisting of three faculty members and two Staff members from a group of ten faculty members and seven staff members?

Solution:

The number of ways to choose three faculty members is $C(10,3)$ and the number of ways to choose two staff members is $C(7,2)$. Using the product rule to choose three faculty member and two staff members, the answer is $C(10,3) \cdot C(7,2) = 2,520$.

Note: The answer is not $C(17,5)$ (which counts all committees of size five) because this ignores the fact that the committees must have exactly three faculty member and exactly two staff members.

Also, the answer is not $C(10,3) + C(7,2)$, which is a commonly made mistake. This says that you are choosing either three faculty member or staff member; it does not count committees of size five.

Question # 5: [05 Marks]

The user codes on a certain computer consists of 3 digits, followed by 3 letters, followed by a digit, for example 123XYZ0. (Assume that no distinction is made between upper-case and Lower-case letters). How many different user codes can be constructed altogether?

Solution:

The number of user codes are $10 \cdot 10 \cdot 10 \cdot 26 \cdot 26 \cdot 26 \cdot 10 = 175760000$.

Question # 6: [05 Marks]

A test is to be generated by selecting ten questions from a test bank consisting of 100 questions. How many different tests are possible, assuming that order in which the questions appear on the test is not taken into account?

Solution:

There are ${}^{100}C_{10} = 1.73 \cdot 10^{13}$ different tests are possible.

BEST OF LUCK!