

Chapter 4 Permutations and Combinations

EE24BTECH11012 - Bhavanisankar G S

- 1) A student is to answer 10 out of 13 questions in an examination such that he must choose atleast four from the first five questions. The number of choices available to him is (2003)
 - a) 346 b) 140 c) 196 d) 280
- 2) The number of ways in which 6 men and 5 women can dine around a round table if no two women are to sit together is given by (2003)
 - a) $7! \times 5!$ b) $6! \times 5!$ c) $30!$ d) $5! \times 4!$
- 3) How many ways are there to arrange the letters in the word *GARDEN* with vowels in alphabetical order (2004)
 - a) 480 b) 240 c) 360 d) 120
- 4) The number of ways of distributing 8 identical balls in 3 distinct boxes so that none of the boxes is empty is (2004)
 - a) 8C_3 b) 21 c) 3^8 d) 5
- 5) If the letters of the word *SACHIN* are arranged in all the possible ways and these words are written out as in dictionary, then the word *SACHIN* appears at the serial number (2005)
 - a) 601 b) 600 c) 603 d) 602
- 6) At an election, a voter may vote for any number of candidates, not greater than the number to be elected. There are 10 candidates and 4 are of be selected, if a voter votes for atleast one candidate, then the number of ways in which he can vote is (2006)
 - a) 5040 b) 6210 c) 385 d) 1110
- 7) The set $S = 1, 2, 3, \dots, 12$ is to be partitioned into three sets A, B and C of equal size. Thus, $A \cup B \cup C = S, A \cap B = B \cap C = A \cap C = \phi$. The number of ways to partition S is (2007)
 - a) $\frac{12!}{(4!)^3}$ c) $\frac{12!}{3!(4!)^3}$
 - b) $\frac{12!}{(4!)^4}$ d) $\frac{12!}{3!(4!)^4}$
- 8) In a shop, there are five types of ice-creams available. A child buys six ice-creams.

Statement1: The number of different ways in which the child can buy six ice-creams is ${}^{10}C_5$.

Statement2: The number of different ways in which the child can buy six ice-creams is equal to the number of different ways of arranging 6 A's and 4 B's in a row. (2008)

 - a) Statement 1 is false, Statement 2 is true.
 - b) Statement 1 is true, Statement 2 is true, Statement 2 is the correct explanation of Statement 1.
 - c) Statement 1 is true, Statement 2 is true, Statement 2 is not a correct explanation of statement 1.
 - d) Statement 1 is true, Statement 2 is false.
- 9) How many different words can be formed by jumbling the letters in the word *MISSISSIPPI* in which no two S are adjacent ?
 - a) $8 {}^6C_4 {}^7C_4$ c) $6 \times 8 {}^7C_4$
 - b) $6 \times 7 {}^8C_4$ d) $7 {}^6C_4 {}^8C_4$
- 10) From 6 different novels and 3 different dictionaries, 4 novels and 1 dictionary are to be selected and arranged in a row on a shelf so that the dictionary is always in the middle. Then the number of such arrangements is: (2009)
 - a) *atleast500butlessthan750*
 - b) *atleast750butlessthan1000*
 - c) *atleast1000*
 - d) *lessthan500*
- 11) There are two urns. Urn A has 3 distinct red balls while Urn B has 9 distinct blue balls. From each urn, two balls are taken at random and then transferred to the other. The number of ways in which this can be done is: (2010)

- a) 36 b) 66 c) 108 d) 3

12) **Statement 1:** The number of ways of distributing 10 identical balls in 4 identical boxes such that no box is empty is 9C_3 .

Statement 2: The number of ways of choosing any three 3 places from 9 different places is 9C_3 . (2011)

- a) Statement 1 is true, statement 2 is true; Statement 2 is the correct explanation of Statement 1.
 b) Statement 1 is true, Statement 2 is true; Statement 2 is not the correct explanation of Statement 1.
 c) Statement 1 is true, Statement 2 is false.
 d) Statement 1 is false, Statement 2 is true.

13) These are 10 points in a plane, out of which 6 are collinear. If N is the number of triangles formed by these points, then; (2012)

- a) $N \leq 100$ c) $140 < N \leq 190$
 b) $100 < N \leq 140$ d) $N > 190$

14) Assuming the balls to be identical except for the difference in colours, The number of ways in which one or more balls can be selected from 10 white, 9 green and 7 black balls. (2012)

- a) 880 b) 629 c) 630 d) 879

15) Let T_n be the set of all possible triangles formed by joining the vertices of a n -sided regular polygon. If $T_{n+1} - T_n = 10$, then the value of n is : (JEEMAIN2013)

- a) 7 b) 5 c) 10 d) 8