MATHS

BOOKS - CENGAGE PUBLICATION

PERMUTATIONS AND COMBINATIONS

Others

1. The number of triangles that can be formed with 10 points as vertices n of them being collinear, is 110. Then n is

a. 3

b. 4

c. 5

d. 6

Watch Video Solution

2. n lines are drawn in a plane such that no two of them are parallel and no three of them are concurrent. The number of different points at which these lines will cut is

a. $\sum_{k=1}^{n-1} k$

b. $n(n-1)$

c. n^2

d. none of these

Watch Video Solution

3. The last digit of $(1! + 2! + \ + 2005!)^{500}$ is

(A) 9

(B) 2

(C) 7

(D) 1

Watch Video Solution

4. The number of ways of choosing a committee of two women and three men from five women and six men, if Mr. A refuses to serve on the committee if Mr. B is a member and Mr. B can only serve if Miss

C is the member of the committee is a. 60 b. 84 c. 124 d. none of these

Watch Video Solution

5. There are 10 points in a plane of which no three points are collinear and four points are concyclic. The number of different circles that can be drawn through at least three points of these points is (A) 116 (B) 120 (C) 117 (D) none of these

Watch Video Solution

6. ABCD is a quadrilateral . 3, 4, 5 and 6 points are market on the sides AB, BC, CD and DA respectively . The number of triangles with vertices on different slides is

Watch Video Solution

7. A person predicts the outcome of 20 cricket matches of his home team. Each match can result in either a win, loss, or tie for the home team. Total number of ways in which he can make the predictions so that exactly 10 predictions are correct is equal to

a. $^{20}C_{10} \times 2^{10}$

b. $^{20}C_{10} \times 3^{20}$

c. $^{20}C_{10} \times 3^{10}$

d. $^{20}C_{10} \times 2^{20}$

Watch Video Solution

8. In a group of 13 cricket players, 4 are bowlers. Find out in how many ways can they form a cricket team of 11 players in which at least 2 bowlers be included.

a. 55

b. 72

c. 78

d. none of these

Watch Video Solution

9. Let there be $n \geq 3$ circles in a plane. The value of n for which the number of radical centers is equal to the number of radical axes is (assume that all radical axes and radical centers exist and are different). a. 7 b. 6 c. 5 d. none of these

Watch Video Solution

10. The number of different ways in which five "alike dashes" and "eight alike" dots can be arranged using only seven of these

"dashes" and "dots" is

a. 350

b. 120

c. 1287

d. none of these

Watch Video Solution

11. Statement 1: the number of ways of writing 1400 as a product of two positive integers is 12.

Statement 2: 1400 is divisible by exactly three prime factors.

(a) Statement 1 and Statement 2 , both are correct. Statement 2 is correct explanation for Statement 1.

(b) Statement 1 and Statement 2 , both are correct. Statement 2 is

not the correct explanation for Statement 1.

(c) Statement 1 is correct but Statement 2 is not correct.

(d) Statement 2 is correct but Statement 1 is not correct.

Watch Video Solution

12. Rajdhani Express going from Bombay to Delhi stops at five intermediate stations, 10 passengers enter the train during the journey with 10 different ticket of two class. The number of different sets of tickets they may have is

a. ${}^{15}C_{10}$

b. ${}^{20}C_{10}$

c. ${}^{30}C_{10}$

d. none of these

Watch Video Solution

13. In a test , there were n number of question. In the test 2^{n-i} students gave wrong answers to i number of question , where i = 1, 2, 3,....., n. If the total number of wrong answer of wrong answer given is 2047, then n is

Watch Video Solution

14. If N denotes the number of ways of selecting r objects of out of n distinct objects $(r \geq n)$ with unlimited repetition but with each object included at least once in selection, then N is equal is a. $.^{r-1}C_{r-n}$ b. $.^{r-1}C_n$ c. $.^{r-1}C_{n-1}$ d. none of these

Watch Video Solution

15. Number of ways in which 30 identical things are distributed among six persons is a. $^{17}C_5$ if each gets odd number of things b

.$^{16}C_{11}$ if each gets odd number of things c.$^{14}C_5$ if each gets even number of things (excluding 0) d.$^{15}C_{10}$ if each gets even number of things (excluding 0)

Watch Video Solution

16. $(10!) = (2)^p.(3)^q.(5)^r.(7)^8$ then

Watch Video Solution

17. A is a set containing n elements. A subset P_1 is chosen and A is reconstructed by replacing the elements of P_1. The same process is repeated for subsets $P_1, P_2, \ldots., P_m$ with $m > 1$. The number of ways of choosing $P_1, P_2, \ldots., P_m$ so that $P_1 \cup P_2 \cup \ldots. \cup P_m = A$ is (a)$(2^m - 1)^{mn}$ (b)$(2^n - 1)^m$ (c)$(m+n)C_m$ (d) none of these

Watch Video Solution

18. Let n be a four-digit integer in which all the digits are different. If x is number of odd integers and y is number of even integers, then a. x less than y b. x greater than y c. $x + y = 4500$ d. $|x - y| = 54$

Watch Video Solution

19. If $P = 21(21^2 - 1^2)(21^2 - 2^2)(21^2 - 3^2).....(21^2 - 10^2), then P$ is divisible by a. $22!$ b. $21!$ c. $19!$ d. $20!$

Watch Video Solution

20. Statement 1: number of ways in which 10 identical toys can be distributed among three students if each receives at least two toys is $.^6 C_2$. Statement 2: Number of positive integral solutions of $x + y + z + w = 7 is ^6 C_3$.

Watch Video Solution

21. Statement 1: The number of positive integral solutions of $abc = 30$ is 27.

Statement 2: Number of ways in which three prizes can be distributed among three persons is 3^3

(a) Statement 1 and Statement 2 , both are correct. Statement 2 is correct explanation for Statement 1.

(b) Statement 1 and Statement 2 , both are correct. Statement 2 is not the correct explanation for Statement 1.

(c) Statement 1 is correct but Statement 2 is not correct.

(d) Statement 2 is correct but Statement 1 is not correct.

Watch Video Solution

22. Prove by combinatorial argument that $.^{n+1}C_r = {}^nC_r + {}^nC_{r-1}.$

Watch Video Solution

23. Prove that $(n!)!$ is divisible by $(n!)^{(n-1)!}$

Watch Video Solution

24. Column I, Column II Number of straight lines joining any two of 10 points of which four points are collinear, p. 30 Maximum number of points of intersection of 10 straight lines in the plane, q. 60 Maximum number of points of intersection of six circles in the plane, r. 40 Maximum number of points of intersection of six parabolas, s. 45

Watch Video Solution

25. If the number of selections of 6 different letters that can be made from the words SUMAN and DIVYA so that each selection

contains 3 letters from each word is N^2, then the value of N is_____.

Watch Video Solution

26. If n_1 and n_2 are five-digit numbers, find the total number of ways of forming n_1 and n_2 so that these numbers can be added without carrying at any stage.

Watch Video Solution

27. If $n_1 and n_2$ are five-digit numbers, find the total number of ways of forming $n_1 and n_2$ so that these numbers can be added without carrying at any stage.

Watch Video Solution

28. If a denotes the number of permutations of $(x+2)$ things taken all at a time, b the number of permutations of x things taken 11 at a time and c the number of permutations of $x-11$ things taken all at a time such that $a=182bc$, find the value of x.

Watch Video Solution

29. If $.^{n}P_{r} = .^{n}P_{r+1}$ and $.^{n}C_{r} = .^{n}C_{r-1}$

then the value of n + r is..

Watch Video Solution

30. Let n be the number of ways in which 5 boys and 5 girls can stand in a queue in such a way that all the girls stand consecutively in the queue. Let m be the number in which 5 boys and 5 girls stand

in such a way that exactly four girls stand consecutively in the queue. Then the value of $\frac{m}{n}$ is ____

Watch Video Solution

31. In how many ways can a pack of 52 cards divided in 4 sets, three of them having 17 cards each and fourth just 1 card ?

Watch Video Solution

32. Let $f(n) = \sum_{r=0}^{n} \sum_{k=r}^{n} (kCr)$ Find the total number of divisors of $f(9)$.

Watch Video Solution

33. True or false: The product of any r consecutive natural numbers is always divisible by $r!$

Watch Video Solution

34. Statement 1: Number of zeros at the end of 50! is equal to 12.

Statement 2: Exponent of 2 in 50! is 47.

A. Statement 1 is correct

B. Statement 2 is correct

C. Both statements are correct

D. None of these

Answer: null

Watch Video Solution

35. Using permutation or otherwise, prove that `(n^2)!/(n!)^n is an integer, where n is a positive integer. (JEE-2004]

Watch Video Solution

36. A number of 18 guests have to be seated, half on each side of a long table. Four particular guests desire to sit on one particular side and three others on the other side. Determine the number of ways in which the sitting arrangements can be made.

Watch Video Solution

37. Ten persons numbered $1, 2, \ldots . , 10$ play a chess tournament, each player against every other player exactly one game. It is known that no game ends in a draw. If $w_1, w_2, \ldots . , w_{10}$ are the number of games won by players $1, 2, \ldots . , 10$ respectively, and $l_1, l_2, \ldots \ldots \ldots \ldots , l_{10}$ are the number of games lost by the players

$1, 2, \ldots\ldots, 10$ respectively, then a. $\sum w_i = \sum l_i = 45$ b. $w_i + 1_i = 9$ c. $\sum w l_1^2 = 81 + \sum l_1^2$ d. $\sum w_i^2 = \sum l_i^2$

Watch Video Solution

38. A box contains 2 white balls, 3 black balls & 4 red balls. In how many ways can three balls be drawn from the box if atleast one black ball is to be included in draw (the balls of the same colour are different).

Watch Video Solution

39. A man has three friends. The number of ways he can invite one friend everyday for dinner on six successive nights so that no friend is invited more than three times is a. 640 b. 320 c. 420 d. 510

Watch Video Solution

40. A forecast is to be made of the results of five cricket matches, each of which can be a win or a draw or a loss for Indian team. Let $p=$ number of forecasts with exactly 1 error $q=$ number of forecasts with exactly 3 error $r=$ number of forecasts with all five error Then the correct statement(s) is/are a. $2q=5r$ b. $8p=q$ c. $8p=r$ d. $2(p+r)>q$

Watch Video Solution

41. Number of points of intersection of n straight lines if n satisfies $n+5P_{n+1}=\frac{11(n-1)}{2}\times^{n+3}P_n$ is a. 15 b. 28 c. 21 d. 10

Watch Video Solution

42. Number of shortest ways in which we can reach from the point (0, 0, 0) to point (3.7, 11) in space where the movement is possible

only along the x-axis, y axis and z-axis or parallel to them and change of axes is permitted only at integral points (an integral point is one which has its coordinate as integer) is

Watch Video Solution

43. Let $f(n)$ be the number of regions in which n coplanar circles can divide the plane. If it is known that each pair of circles intersect in two different points and no three of them have common points of intersection, then $(i)\ f(20) = 382\ (ii)\ f(n)$ is always an even number $(iii)\ f^{-1}(92) = 10\ (iv)\ f(n)$ can be odd

Watch Video Solution

44. If p,q,r are any real number, then

Watch Video Solution

45. The number of ways of choosing triplet (x, y, z) such that $z > \max\{x, y\}$ and $x, y, z \in \{1, 2, \ldots\ldots n, n+1\}$ is (A) $.^{n} + 1C_3 + {}^{n+2}C_3$ $(B) n(n+1)(2n+1)/6$ (C) $1^2 + 2^2 + \ldots\ldots\ldots . + n^2$ (D) $2\left(.^{n+2}C_3\right) - \left(.^{n+1}C_2\right)$

Watch Video Solution

46. Find the value of $4C_1 - 2C_2$

Watch Video Solution

47. If a seven-digit number made up of all distinct digits 8, 7, 6, 4, 2, x and y divisible by 3, then (A) Maximum value of $x - y$ is 9 (B) Maximum value of $x + y$ is 12 (C) Minimum value of xy is 0 (D) Minimum value of $x + y$ is 3

Watch Video Solution

48. If n is number of necklaces which can be formed using 17 identical pearls and two identical diamonds and similarly m is number of necklaces which can be formed using 17 identical pearls and 2 different diamonds, then a) n=9 b) m = 18 c) n = 18 d) m = 9

Watch Video Solution

49. In how many ways can two distinct subsets of the set A of $k(k \geq 2)$ elements be selected so that they haves exactly two common elements?

Watch Video Solution

50. There are 2n guests at a dinner party. Supposing that the master and mistress of the house have fixed seats opposite one another , and that there are two specified guests who must not be

placed next to one another. find the number of ways in which the company can be placed.

Watch Video Solution

51. There are n is straight lines in a plane in which no two are parallel and no three pass through the same point their points of intersection are joined show that the number of fresh lines thus introduced is (1/8)n(n-1)(n-2)(n-3)

Watch Video Solution

52. A coin is tossed $2n$ times. The chance that the number of times one gets head is not equal to the number of times one gets tails is $\frac{(2n!)}{(n!)^2}\left(\frac{1}{2}\right)^{2n}$ b. $1-\frac{(2n!)}{(n!)^2}$ c. $1-\frac{(2n!)}{(n!)^2}\frac{1}{(4^n)}$ d. none of these

Watch Video Solution

53. An ordinary cubical dice having six faces marked with alphabets A, B, C, D, E, and F is thrown n times and the list of n alphabets showing up are noted. Find the total number of ways in which among the alphabets A, B, C D, E and F only three of them appear in the list.

Watch Video Solution

54. How many five-digit numbers can be made having exactly two identical digits?

Watch Video Solution

55. The members of a chess club took part in a round robin competition in which each player plays with other once. All members scored the same number of points, except four juniors

whose total score ere 17.5. How many members were there in the club? Assume that for each win a player scores 1 point, 1/2 for a draw, and zero for losing.

Watch Video Solution

56. Find the number of three-digit numbers from 100 to 999 including all numbers which have any one digit that is the average of the other two.

Watch Video Solution

57. Find the number of ways of disturbing n identicalobjects among n persons if at least $n-3$ persons get none of these objects.

Watch Video Solution

58. There are n points in a plane of which no three are in a straight line except 'm' which are all in a straight line. Then the number of different quadrilaterals, that can be formed with the given points as vertices, is

Watch Video Solution

59. The number of arrangements two letters of the word BANANA in which two N's do not appear adjacently is

Watch Video Solution

60. Seven relatives of a man comprises four ladies and three gentlemen: his wife has also seven relatives-three of them are ladies and four gentlemen. In how many ways fan they invite 3 ladies and 3

gentlemen at a dinner party so that there are three man's relatives and three wife's relatives?

Watch Video Solution

61. A three-digit number is to be formed using the digits $0, 1, 2, 3, 4, \text{ and } 5,$ without repetition.

Watch Video Solution

62. If N is the number of ways in which 3 distinct numbers canbe selected from the set $\{3^1, 3^2, 3^3, , 3^{10}\}$ so that they form a G.P. then the value of $N/5$ is _____.

Watch Video Solution

63. Find the total number of nine-digit numbers that can be formed using the digits 2, 2, 3, 3, 5, 5, 8, 8, 8 so that the odd digit occupy the even places.

Watch Video Solution

64. m men and n women are to be seated in a row so that no two women sit together. If $(m > n)$ then show that the number of ways in which they can be seated as $\frac{m!(m+1)!}{(m-n+1)!}$.

Watch Video Solution

65. Ten different letters of an alphabet are given . Word with five letters are formed from these given letters . Then the number of words which have at least one letter repeated is

Watch Video Solution

66. $If,^{n} C_{r} = 84$, and $^{n}C_{r-1} = 36,$ and $^{n}C_{r+1} = 126$, then find the value of n and r

Watch Video Solution

67. Eight chairs are numbered 1 to 8. Two women and three men wish to occupy one chair each. First, the women choose the chairs from amongst the chairs marked 1 to 4, and then the men select th chairs from amongst the remaining. The number of possible arrangements is

a. $^{6}C_{3} \times {}^{4}C_{2}$

b. $^{4}P_{2} \times {}^{4}P_{3}$

c. $^{4}C_{2} \times {}^{4}P_{3}$

d. none of these

Watch Video Solution

68. The value of expression $.^{47}C_4 + \sum_{j=1}^{5} .^{52-j}C_3$ is equal to a. $.^{47}C_5$ b. $.^{52}C_5$ c. $.^{52}C_4$ d. none of these

Watch Video Solution

69. The number of n digit numbers which consists of the digit 1 and 2 only if each digit is to be used atleast once is equal to 510, then n is equal to _____.

Watch Video Solution

70. If ${}^nC_3 + {}^nC_4 > {}^{n+1}C_3$, then

a. $n > 6$

b. $n > 7$

c. $n < 6$

d. none of these

Watch Video Solution

71. The value of $\sum_{r=0}^{n-1} \frac{{}^{n}C_{r}}{{}^{n}C_{r} + {}^{n}C_{r+1}}$ equals

a. $n+1$

b. $\frac{n}{2}$

c. $n+2$

d. none of these

Watch Video Solution

72. A bag contains four one-rupee coins, two twenty-five paisa coins, and five ten-paisa coins. In how many ways can an amount, not less than Rs. 1 be taken out from the bag? (Consider coins of the same denominations to be identical.) a. 71 b. 72 c. 73 d. 80

Watch Video Solution

73. There are four letters and four directed envelopes. The number of ways in which all the letters can be put in the wrong envelope is

a. 8 b. 9 c. 16 d. none of these

Watch Video Solution

74. Kanchan has 10 friends among whom two are married to each other. She wishes to invite five of them for a party. If the married couples refuse to attend separately, then the number of different ways in she can invite five friends is

a. ${}^{8}C_{5}$

b. $2 \times {}^{8}C_{3}$

c. ${}^{10}C_{5} - 2 \times {}^{8}C_{4}$

d. none of these

Watch Video Solution

75. Number of ways in which three numbers in A.P. can be selected from $1, 2, 3, \ldots, n$ is a. $\left(\frac{n-1}{2}\right)^2$ if n is even b. $n\frac{n-2}{4}$ if n is even c. $\frac{(n-1)^2}{4}$ if n is odd d. none of these

Watch Video Solution

76. The total number of positive integral solution of $15 < x_1 + x_2 + x_3 \leq 20$ is equal to a. 685 b. 785 c. 1125 d. none of these

Watch Video Solution

77. A train time table must be compiled for various days of the week, so that two trains twice a day depart for three days, one train daily for two days, and three trains once a day for two days. How many diferent time table can be compiled?

Watch Video Solution

78. The streets of a city are arranged like the lines of a chess board. There are m streets running from north to south and n streets from east to west. Find the number of ways in which a man can travel from north-west to south-east corner, covering shortest possible distance.

Watch Video Solution

79. A batsman scores exactly a century by hitting fours and sixes in 20 consecutive balls. In how many different ways can he do it if some balls may not yield runs and the order of boundaries and over boundaries are taken into account?

Watch Video Solution

80. In how many ways can $2t+1$ identical balls be placed in three distinct boxes so that any two boxes together will contain more balls than the third?

Watch Video Solution

81. John has x children by his first wife,. Mary has (k + 1) children by his first husband , they marry and have children of their own, The whole family has 24 children . Assuming that two children of the same parents do not fight. The maximum number of fight is λ, then $\frac{\lambda}{191}$ is.....

Watch Video Solution

82. let $a_1, a_2, \ldots a_n$ be in A.P. wth common difference $\frac{\pi}{6}$. If $\sec a_1 \sec a_2 + \sec a_2 \sec a_3 + \ldots. \sec a_{n-1} \sec a_n =$ $k(\tan a_n - \tan a_1)$. Find the value of k

Watch Video Solution

83. Six apples and six mangoes are to be distributed among ten boys so that each boy receives at least one fruit. Find the number ways in which the fruits can be distributed.

Watch Video Solution

84. Find the number of ways in which we can choose 3 squares on a chess board such that one of the squares has its two sides common to other two squares.

Watch Video Solution

85. If $\alpha = {}^{m}C_{2}$, then ${}^{\alpha}C_{2}$ is equal to

a. ${}^{m+1}C_{4}$

b. ${}^{m-1}C_4$

c. $3\,{}^{m+2}C_4$

d. $3\,{}^{m+1}C_4$

Watch Video Solution

86. Statement 1: $\frac{(n^2)!}{(n!)^n}$ is natural number of for all $n \in N$

Statement 2: Number of ways in which n^2 objects can be distributed among n persons equally is $(n^2)!/(n!)^n$.

Watch Video Solution

87. Number of ways in which 7 people can occupy 6 seats, 3 seats on each side in a first class railway compartment if two specified persons are to be always included and occupy adjacent seats on the same side is $(5!)\dot{k}, then k$ has the value equal to _____.

Watch Video Solution

88. There are 20 books on Algebra and Calculus in one library. For the greatest number of selections each of which consists of 5 books on each topic. If the possible number of Algebra books are N, then the value N/2 is _____.

Watch Video Solution

89. Let P_n denotes the number of ways in which three people can be selected out of 'n' people sitting in a row, if no two of them are consecutive. If $P_{n+1} - P_n = 15$ then the value of 'n` is____.

Watch Video Solution

90. An n-digit number is a positive number with exactly n Nine hundred distinct n-digit numbers are to be formed using only the

three digits $2, 5, \text{ and } 7$. The smallest value of n for which this is possible is (a) 6 (b) 7 (c) 8 (d) 9

Watch Video Solution

91. There are 2 women participating in a chess tournament. Every participant played 2 games with the other participants. The number of games that the men played between themselves exceeded by 66 as compared to the number of games that the men played with women. If the number of participants is n , then the value of $n - 6$ is _____.

Watch Video Solution

92. Five balls of different color are to be placed in three boxes of different size. Each box can hold all five. In how many different ways can we place the balls so that no box remains empty?

Watch Video Solution

93. A seven-digit number without repetition and divisible by 9 is to be formed by using seven digits out of $1, 2, 3, 4, 5, 6, 7, 8, 9$. The number of ways in which this can be done is (a) $9!$ (b) $2(7!)$ (c) $4(7!)$ (d) non of these

Watch Video Solution

94. n is selected from the set $\{1, 2, 3, \ldots\ldots\ldots\ldots, 100\}$ and the number $2^n + 3^n + 5^n$ is formed. Total number of ways of selecting n so that the formed number is divisible by 4 is equal to (A) 50 (B) 49 (C) 48 (D) None of these.

Watch Video Solution

95. Messages are conveyed by arranging four white, one blue, and three red flags on a pole. Flags of the same color are alike. If a message is transmitted by the order in which the colors are arranged, the total number of messages that can be transmitted if exactly six flags are used is a. 45 b. 65 c. 125 d. 185

Watch Video Solution

96. 20 persons are sitting in a particular arrangement around a circular table. Three persons are to be selected for leaders. The number of ways of selection of three persons such that no two were sitting adjacent to each other is a. 600 b. 900 c. 800 d. none of these

Watch Video Solution

97. A is a set containing n different elements. A subset $PofA$ is chosen. The set A is reconstructed by replacing the elements of $P\dot{A}$ suhcset $QofA$ is again chosen. The number of ways of choosing $PandQ$ so that $P \cap Q$ contains exactly two elements is a. $\hat{}\ {}^{n}C_3 \times 2^n$ b. $\hat{}\ {}^{n}C_2 \times 3^{n-2}$ c. 3^{n-1} d. none of these

Watch Video Solution

98. Numbers greater than 1000 but not greater than 4000 which can be formed with the digits 0, 1, 2, 3, 4 (repetition of digits is allowed) are a. 350 b. 375 c. 450 d. 576

Watch Video Solution

99. Find ${}^{5}C_2$

Watch Video Solution

100. The number less than 1000 that can be formed using the digits 0, 1, 2, 3, 4, 5 when repetition is not allowed is equal to a. 130 b. 131 c. 156 d. 155

Watch Video Solution

101. A variable name in certain computer language must be either an alphabet or an alphabet followed by a decimal digit. The total number of different variable names that can exist in that language is equal to a. 280 b. 390 c. 286 d. 296

Watch Video Solution

102. The number of 5 digits numbers that contain 7 exactly once is

Watch Video Solution

103. The total number of flags with three horizontal strips in order, which can be formed using 2 identical red, 2 identical green, and 2 identical white strips is equal to a. $4!$ b. $3 \times (4!)$ c. $2 \times (4!)$ d. none of these

Watch Video Solution

104. Let A be a set of $n(\geq 3)$ distinct elements. The number of triplets (x, y, z) of the elements of A in which ar least two coordinates are equal is

Watch Video Solution

105. The number of possible outcomes in a throw of n ordinary dice in which at least one of the die shows and odd number is a. $6^n - 1$ b. $3^n - 1$ c. $6^n - 3^n$ d. none of these

Watch Video Solution

106. In a room there are 12 bulbs of the same wattage, each having separate switch. The number of ways to light the room with different amounts of illumination is (a)$12^2 - 1$ (b) 2^{12} (c) $2^{12} - 1$ (d) none of these

Watch Video Solution

107. In a city no two persons have identical set of teeth and there is no person without a tooth. Also no person has more than 32 teeth. If we disregard the shape and size of tooth and consider only the positioning of the teeth, the maximum population of the city is (A) 2^{32} (B) $(32)^2 - 1$ (C) $2^{32} - 1$ (D) 2^{32-1}

Watch Video Solution

108. Consider the five points comprising the vertices of a square and the intersection point of its diagonals. How many triangles can be formed using these points?

Watch Video Solution

109. The letters of the word COCHIN are permuted and all the permutations are arranged in an alphabetical order as in an english dictionary the number of words that appear before the word COCHIN is

Watch Video Solution

110. There are 3 men and 7 women taking a dance class. If N ils number of different ways in which each man be paired with a women partner, and the four remaining women be paired into two pairs each of two, then the value of $N/90$ is_____.

Watch Video Solution

111. Let $S = \{1, 2, 3, 4\}$. The total number of unordered pairs of disjoint subsets of S is equal a.25 b. 34 c. 42 d. 41

Watch Video Solution

112. Number of permutations of 1, 2, 3, 4, 5, 6, 7, 8, and 9 taken all at a time are such that the digit 1 appearing somewhere to the left of 2 3 appearing to the left of 4 and 5 somewhere to the left of 6, is $k \times 7!$ Then the value of k is _____.

Watch Video Solution

113. The number of distinct natural numbers up to a maximum of four digits and divisible by 5, which can be formed with the digits 0,

1 , 2, 3, 4, 5, 6, 7, 8, 9 each digit not occurring more than once in each number, is a. 1246 b. 952 c. 1106 d. none of these

Watch Video Solution

114. In a three-storey building, there are four rooms on the ground floor, two on the first and two on the second floor. If the rooms are to be allotted to six persons, one person occupying one room only, the number of ways in which this can be done so that no floor remains empty is a. ${}^8P_6 - 2(6!)$ b. ${}^8P_6$ c. ${}^8P_5(6!)$ d. none of these

Watch Video Solution

115. Find $6C_2$

Watch Video Solution

116. The number of three-digit numbers having only two consecutive digit identical N, then the value of $(N/2)^{1/2}$ is _____.

Watch Video Solution

117. Number of four-digit numbers of the form $N = abcd$ which satisfy following three conditions (i) $(ii)(iii)4000 \leq N < 6000(iv)$ (v) (vi) $(vii)N(viii)$ (ix) is a multiple of 5 (x) `(x i) (xii)3lt=b

Watch Video Solution

118. Find the number of ways in which $5A's$ and $6B's$ can be arranged in a row which reads the same backwards and forwards.

Watch Video Solution

119. If N is the number of different paths of length-12 which leads from A to B in the grid which do not pass through M, then the value of $[N/10] where [.]$ represents the greatest integer function is _____.

Watch Video Solution

120. The number of nine nonzero digits such that all the digits in the first four places are less than the digit in the middle and all the digits in the last four places are greater than that in the middle is a. $2(4!)$ b. $3(7!)/2$ c. $2(7!)$ d. ˆ $4P_4 \times^4 P_4$

Watch Video Solution

121. Total number of words that can be formed using all letters of the word BRIJESH that neither begins with I nor ends with B is equal

to a. 3720 b. 4920 c. 3600 d. 4800

Watch Video Solution

122. The total number of five digit numbers of different digits in which the digit in the middle is the largest is

Watch Video Solution

123. The number of four-digit numbers that can be made with the digits 1, 2, 3, 4, and 5 in which at least two digits are identical is a. $4^5 - 5!$ b. 505 c. 600 d. none of these

Watch Video Solution

124. Total numbers formed less than 3×10^8 and can be formed using the digits 1, 2, 3 is equal to a. $\frac{1}{2}\left(3^9 + 4 \times 368\right)$ b. $\frac{1}{2}\left(3^9 - 3\right)$

c. $\frac{1}{2}(7 \times 3^8 - 3)$ d. $\frac{1}{2}(3^9 - 3 + 3^8)$

Watch Video Solution

125. If all permutations of the letters in the word 'OBJECT" are arranged (and numbered serially) in alphabetical order as in a dictionary then the 717^th word is

Watch Video Solution

126. The total number of six-digit natural numbers that can be made with the digits 1, 2, 3, 4, if all digits are to appear in the same number at least once is a. 1560 b. 840 c. 1080 d. 480

Watch Video Solution

127. Total number of six-digit number in which all and only odd digits appear is a. $\frac{5}{2}(6!)$ b. $6!$ c. $\frac{1}{2}(6!)$ d. none of these

Watch Video Solution

128. Among the 8! [permutations of the digits 1, 2, 3..., 8, consider those arrangements which have the following property. If we take any five consecutive positions the product of the digits in these positions is divisible by 5. The number of such arrangements is equal to a. $7!$ b. $2.(7!)$ c.$7C_4$ d. none of these

Watch Video Solution

129. The total number of ways of selecting two numbers from the set $\{1, 2, 3, 4, \ldots\ldots .3n\}$ so that their sum is divisible by 3 is equal to a. $\frac{2n^2-n}{2}$ b. $\frac{3n^2-n}{2}$ c. $2n^2-n$ d. $3n^2-n$

Watch Video Solution

130. The total number of times, the digit 3 will be written when the integers having less than 4 digits are listed is equal to a. 300 b. 310 c. 302 d. 306

Watch Video Solution

131. The total number of divisor of 480 that are of the form $4n+2, n \geq 0,$ is equal to a. 2 b. 3 c. 4 d. none of these

Watch Video Solution

132. The total number of ways of selecting six coins out of 20 one-rupee coins, 10 fifty-paisa coins, and 7 twenty-five paisa coins is: (a.) 28 (b.) 56 (c.) $\hat{}\ 37C_6$ (d.) none of these

Watch Video Solution

133. In how many ways can 17 persons depart from railway station in 2 cars and 3 autos, given that 2 particular persons depart by the same car (4 persons can sit in a car and 3 persons can sit in an auto)? a. $\frac{15!}{2!4!(3!)^3}$ b. $\frac{16!}{(2!)^2 4!(3!)^3}$ c. $\frac{17!}{2!4!(3!)^3}$ d. $\frac{15!}{4!(3!)^3}$

Watch Video Solution

134. The number of ways in which three distinct numbered in an increasing A.P. can be selected from the set {1,2,3.....24} is

Watch Video Solution

135. Let $f(n, k)$ denote the number of ways in which k identical balls can be colored with n colors so that there is at least one ball

of each color. Then $f(n, 2n)$ must be equal to

a. ${}^{2n}C_n$

b. ${}^{2n-1}C_{n+1}$

c. ${}^{2n-1}C_n$

d. none of these

Watch Video Solution

136. In a polygon, no three diagonals are concurrent. If the total number of points of intersection of diagonals interior to the polygon is 70, then the number of diagonals of the polygon is

a. 20 b. 28 c. 8 d. none of these

Watch Video Solution

137. Straight lines are drawn by joining m points on a straight line of n points on another line. Then excluding the given points, the

number of point of intersections of the lines drawn is (no tow lines drawn are parallel and no these lines are concurrent). a. $4mn(m-1)(n-1)$ b. $\frac{1}{2}mn(m-1)(n-1)$ c. $\frac{1}{2}m^2n^2$ d. $\frac{1}{4}m^2n^2$

Watch Video Solution

138. A man has three friends. The number of ways he can invite one friend everyday for dinner on six successive nights so that no friend is invited more than three times is a. 640 b. 320 c. 420 d. 510

Watch Video Solution

139. The sum of all the numbers of four different digits that can be made by using the digits 0, 1, 2, and 3 is a. 26664 b. 39996 c. 38664 d. none of these

Watch Video Solution

140. The sum of digits in the unit's place of all numbers formed with the help of 3, 4, 5, 6 taken all at a time is a. 18 b. 432 c. 108 d. 144

Watch Video Solution

141. A person has n friends. The minimum value of n so that a person can invite a different pairs of friends every day for four weeks in a row is _____.

Watch Video Solution

142. There are n distinct white and n distinct black ball. If the number of ways of arranging them in a row so that neighbouring balls are of different colors is 1152, then value of n is _____.

Watch Video Solution

143. Numbers from 1 to 1000 are divisible by 60 but not by 24 is _____.

Watch Video Solution

144. If the number of ways in which the letters of the word ABBCABBC can be arranged such that the word ABBC does not appear is any word is N, then the value of $\left(N^{1/2}-10\right)$ is_____.

Watch Video Solution

145. A class has three teachers, Mr. P , Ms. Q, and Mrs. R and six students A,B,C,D,E,F. Number of ways in which they can be seated in a line of 9 chairs, if between any two teachers there are exactly two students, is $k!(18)$, then value of$k$ is _____.

Watch Video Solution

146. Column I, Column II The number of five-digit numbers having the product o digit 20 is, p. > 70 A closest has five pairs of shoes. The number of ways in which four shoes can be drawn from it such that there will be no complete pair is, q. < 60 Three ladies have each brought their one child for admission to a school. The principal wants to interview the six persons one by one subject to the condition that no mother is interviewed before her child. The number of ways in which interview can be arranged is, r. $\in (50, 110)$ The figures 4, 5, 6, 7, 8 are written in every possible order. The number of numbers greater than 56000 is, s. $\in (40, 70)$

Watch Video Solution

147. The number of words of four letters containing equal number of vowels and consonants, where repetition is allowed, is a. 105^2 b. 210×243 c. 105×243 d. 150×21^2

Watch Video Solution

148. The number of ways in which we can select four numbers from 1 to 30 so as to exclude every selection of four consecutive numbers is a. 27378 b. 27405 c. 27399 d. none of these

Watch Video Solution

149. The total number of three-letter words that can be formed from the letter of the word SAHARANPUR is equal to a. 210 b. 237 c. 247 d. 227

Watch Video Solution

150. The number of different seven digit numbers that can be written using only the three digit 1, 2 and 3 with the condition that

the digit 2 occurs twice in each number is

Watch Video Solution

151. The number of ways of arranging m positive and $n(<m+1)$ negative signs in a row so that no two are together is a.= $\hat{}\ m+1p_n$ b.= $\hat{}\ n+1p_m$= c.= $\hat{}\ m+1c_n$="" d.= $\hat{}\ n+1c_m$

Watch Video Solution

152. The number of ways to fill each of the four cells of the table with a distinct natural number such that the sum of the number is

10 and the sums of the numbers placed diagonally are equal is

Watch Video Solution

153. A library has a copies of one book, b copies each of two books, c copies each of three books, a single copy of d books. The total number of ways in which these books can be arranged in a shelf is equal to

a. $\frac{(a+2b+3c+d)!}{a!(b!)^2(c!)^3}$

b. $\frac{(a+2b+3c+d)!}{a!(2b!)^2(c!)^3}$

c. $\frac{(a+b+3c+d)!}{(c!)^3}$

d. $\frac{(a+2b+3c+d)!}{a!(2b!)(c!)^3}$

Watch Video Solution

154. Three boys of class X, four boys of class XI, and five boys of class XII sit in a row. The total number of ways in which these boys can sit so that all the boys of same class sit together is equal to a. $(3!)^2(4!)(5!)$ b. $(3!)(4!)^2(5!)$ c. $(3!)(4!)(5!)$ d. $(3!)(4!)(5!)^2$

Watch Video Solution

155. Number of ways in which 25 identical things be distributed among five persons if each gets odd number of things is

Watch Video Solution

156. Number of ways in which Rs. 18 can be distributed amongst four persons such that nobody receives less than Rs. 3 is a. 4^2 b. 2^4 c. $4!$ d. none of these

Watch Video Solution

157. $2m$ white counters and $2n$ red counters are arranged in a straight line with $(m+n)$ counters on each side of central mark. The number of ways of arranging the counters, so that the arrangements are symmetrical with respect to the central mark is $(A)\ .^{m+n}C_m\ (B)\ .^{2m+2n}C_{2m}\ (C)\ \frac{1}{2}\frac{(m+n)!}{m!n!}\ (D)$ None of these

Watch Video Solution

158. A person buys eight packets of TIDE detergent. Eachpacket contains one coupon, which bears one of the let-ters of the word

TIDE. If he shows all the letters of theword TIDE, he gets one free packet. If he gets exactlyone free packet, then the number of different possiblecombinations of the coupons is

Watch Video Solution

159. The number of ways in which 12 books can be put in three shelves with four on each shelf is a. $\frac{12!}{(4!)^3}$ b. $\frac{12!}{(3!)(4!)^3}$ c. $\frac{12!}{(3!)^3 4!}$ d. none of these

Watch Video Solution

160. The number of ways in which 12 books can be put in three shelves with four on each shelf is a. $\frac{12!}{(4!)^3}$ b. $\frac{12!}{(3!)(4!)^3}$ c. $\frac{12!}{(3!)^3 4!}$ d. none of these

Watch Video Solution

161. The total number of ways in which $2n$ persons can be divided into n couples is a. $\frac{2n!}{n!n!}$ b. $\frac{2n!}{(2!)^3}$ c. $\frac{2n!}{n!(2!)^n}$ d. none of these

Watch Video Solution

162. Let $x_1, x_2, x_3, \ldots\ldots, x_k$ be the divisors of positive integer n (including 1 and n). If $x_1 + x_2 + x_3 + \ldots\ldots + x_k = 75$ Then $\sum_{i=1}^{k}\left(\frac{1}{x_i}\right)$ is equal to (A) $\frac{75}{k}$ (B) $\frac{75}{n}$ (C) $\frac{1}{n}$ (D) $\frac{1}{75}$

Watch Video Solution

163. Let $A = \{x_1, x_2, x_3, , x_7\}, B = \{y_1, y_2, y_3\}$ The total number of functions $f: A \to B$ that are onto and there are exactly three element x in A such that $f(x) = y_2$ is equal to a. 490 b. 510 c. 630 d. none of these

Watch Video Solution

164. The total number of ways in which n^2 number of identical balls can be put in n numbered boxes $(1, 2, 3, \ldots\ldots\ldots n)$ such that ith box contains at least i number of balls is a. $.^{n^2} C_{n-1}$ b. $.^{n^2-1} C_{n-1}$ c. $.^{\frac{n^2+n-2}{2}} C_{n-1}$ d. none of these

Watch Video Solution

165. A committee of 12 is to be formed from nine women and eight men. In how many ways can this be done if at least five women have to be included in a committee? In how many of these committees a. the women hold majority? b. the men hold majority?

Watch Video Solution

166. Let T_n denote of the number of triangles which can be formed using the vertices of a regular polygon of n sides If $T_{n+1} - T_n = 21$ then n is

Watch Video Solution

167. In a group of boys, two boys are brothers and six more boys are present in the group. In how many ways can they sit if the brothers are not to sit along with each other? a.$2 \times 6!$ b. $\hat{} \ 7P_2 \times 6!$ c. $\hat{} \ 7C_2 \times 6!$ d. none of these

Watch Video Solution

168. If N is the number of ways in which a person can walk up a stairway which has 7 steps if he can take 1 or 2 steps up the stairs at a time then the value of $N/3$ is _____.

Watch Video Solution

169. $If,^{n} C_{r} = 84$, and $^{n}C_{r-1} = 36,$ and $^{n}C_{r+1} = 126$, then find the value of n and r

Watch Video Solution

170. find $7C_4$

Watch Video Solution

171. Find the number of ways in which 22 different books can be given to 5 students, so that two students get 5 books each and all the remaining students get 4 books each.

Watch Video Solution

172. Consider the convex polygon, which has 35 diagonals. Then match the following column. Column I, Column II Number of triangles joining the vertices of the polygon, p. 210 Number of points intersections of diagonal which lies inside the polygon, q. 120 Number of triangles in which exactly one side is common with that of polygon, r. 10 Number of triangles in which exactly two sides are common with that of polygon, s. 60

Watch Video Solution

173. Find $5C_0$

Watch Video Solution

174. Consider a 6×6 chessboard. Then match the following columns. Column I, Column II Number of rectangles, p. ˆ $10C_5$ Number of squares, q. 441 Number of ways three squares can be

selected if they are not in same row or column, r. 91 In how many ways eleven + sign can be arranged in the squares if no row remains empty, s. 2400

Watch Video Solution

175. Ten persons amongst whom are A,B and C are to speak at a function the number of ways in which it can be done if A wants to speak before B and B wants to speak before C is

Watch Video Solution

176. In how many ways can three persons, each throwing a single dice once, make a sum of 15?

Watch Video Solution

177. In how many ways can a team of 11 players be formed out of 25 players, if 6 out of them are always to be included and 5 always to be excluded a. 2020 b. 2002 c. 2008 d. 8002

Watch Video Solution

178. Find the number of positive integral solutions of the inequality $3x + y + z \leq 30$.

Watch Video Solution

179. How many integers between 1 and 10,00,000 have the sum of the digits equal to 18

Watch Video Solution

180. Statement 1: Number of terms in the expansion of $(x+y+z+w)^{50}$ is ${}^{53}C_3$

Statement 2: Number of non-negative solution of the equation $p+q+r+s=50$ is ${}^{53}C_3$

(a) Statement 1 and Statement 2, both are correct. Statement 2 is the correct explanation for Statement 1

(b) Statement 1 and Statement 2, both are correct. Statement 2 is not the correct explanation for Statement 1

(c) Statement 1 is correct but Statement 2 is not correct.

(d) Both Statement 1 and Statement 2 are not correct.

Watch Video Solution

181. Find the number of seven letter words that can be formed by using the letters of the word SUCCESS so that the two C are together but no two S are together.

Watch Video Solution

Watch Video Solution

182. The number of ways in which 10 candidates A_1, A_2, A_{10} can be ranked such that A_1 is always above A_{10} is a. $5!$ b. $2(5!)$ c. $10!$ d. $\frac{1}{2}(10!)$

Watch Video Solution

183. There are six teachers. Out of them two are primary teacher, two are middle teachers, and two are secondary teachers. They are to stand in a row, so as the primary teachers, middle teacher, and secondary teachers are always in a set. Find the number of ways in which they can do so.

Watch Video Solution

184. In the decimal system of numeration of six-digit numbers in which the sum of the digits is divisible by 5 is a. 180000 b. 540000 c. 5×10^5 d. none of these

Watch Video Solution

185. There are 2 identical white balls, 3 identical red balls, and 4 green balls of different shades. Find the number of ways in which they can be arranged in a row so that atleast one ball is separated from the balls of the same color.

Watch Video Solution

186. To fill 12 vacancies, there are 25 candidates of which 5 are from scheduled caste. If three of the vacancies are reserved for scheduled caste candidates while the rest are open to all; the number of ways

in which the selection can be made is

a. ${}^5C_3 \times {}^{22}C_9$

b. ${}^{22}C_9 - {}^5C_3$

c. ${}^{22}C_3 + {}^5C_3$

d. none of these

Watch Video Solution

187. Find the number of ways in which 6 boys and 6 girls can be seated in a row so that all the girls sit together and all the boys sit together.

Watch Video Solution

188. If the difference of the number of arrangements of three things from a certain number of dissimilar things and the number of

selection of the same number of things from them exceeds 100, then the least number of dissimilar things is a. 8 b. 6 c. 5 d. 7

Watch Video Solution

189. The number of ways in which the letters of the word ARRANGE be arranged so that the two R's are never together.

Watch Video Solution

190. The sum of all four-digit numbers that can be formed by using the digits 2, 4, 6, 8 (when repetition of digits is not allowed) is a. 133320 b. 5333280 c. 53328 d. none of these

Watch Video Solution

191. Find the value (s) of r satisfying the equation ${}^{69}C_{3r-1} - {}^{69}C_{r^2} = {}^{69}C_{r^2-1} - {}^{69}C_{3r}$.

Watch Video Solution

192. The number of ordered pairs of integers (x, y) satisfying the equation $x^2 + 6x + y^2 = 4$ is a. 2 b. 8 c. 6 d. none of these

Watch Video Solution

193. Prove that ${}^{n}C_r + {}^{n-1}C_r + \ldots + {}^{r}C_r = {}^{n+1}C_{r+1}$.

Watch Video Solution

194. The number of five-digit telephone numbers having atleast one of their digits repeated is a. 90000 b. 100000 c. 30240 d. 69760

Watch Video Solution

195. If ${}^{15}C_{3r} = {}^{15}C_{r+3}$, then find r.

Watch Video Solution

196. How many numbers can be made with the digits 3, 4, 5, 6, 7, 8 lying between 3000 and 4000, which are divisible by 5 while repetition of any digit is not allowed in any number? a. 60 b. 12 c. 120 d. 24

Watch Video Solution

197. In how many ways can 10 different prizes be given to 5 students if one particular boy must get 4 prizes and rest of the students can get any number of prizes?

Watch Video Solution

198. The number of ways in which we can distribute mn students equally among m sections is given by a. $\frac{(mn!)}{n!}$ b. $\frac{(mn)!}{(n!)^m}$ c. $\frac{(mn)!}{m!n!}$ d. $(mn)^m$

Watch Video Solution

199. Consider the equation $\frac{2}{x}+\frac{5}{y}=\frac{1}{3} where x, y \in N$. Find the number of solutions of the equation.

Watch Video Solution

200. Find the number of ways to give 16 different things to three persons A, B, C so that B gets 1 more than A and C gets 2 more than B.

Watch Video Solution

201. In how many ways can 10 persons take seats in a row of 24 fixed seats so that no two persons take consecutive seats.

Watch Video Solution

202. If n objects are arrange in a row, then the number of ways of selecting three of these objects so that no two of them are next to each other is a. ${}^{n-2}C_3$ b. ${}^{n-3}C_2$ c. ${}^{n-3}C_3$ d. none of these

Watch Video Solution

203. In how many ways can a party of 6 men be selected out of 10 Hindus, 8 Muslims, and 6 Christians, if the party consists of atleast

one person of each religion? Find the number of ways of selection. (Consider only the religion of the person).

Watch Video Solution

204. Fifteen identical balls have to be put in five different boxes. Each box can contain any number of balls. The total number of ways of putting the balls into the boxes so that each box contains at least two balls is equal to a. $.^{9}C_{5}$ b. $.^{10}C_{5}$ c. $.^{6}C_{5}$ d. $.^{10}C_{6}$

Watch Video Solution

205. Find the total number of positive integral solutions for (x, y, z) such that $xyz = 24$. Also find out the total number of integral solutions.

Watch Video Solution

206. In how many different ways can the first 12 natural numbers be divided into three different groups such that numbers in each group are in A.P.? a. 1 b. 5 c. 6 d. 4

Watch Video Solution

207. Find the number of non-negative integral solutions of equation $x + y + z + 2w = 20.$

Watch Video Solution

208. The number of ways in which we can get a score of 11 by throwing three dice is a. 18 b. 27 c. 45 d. 56

Watch Video Solution

209. Find the number of non-negative integral solutions of $x + y + z + w \leq 20$.

Watch Video Solution

210. The number of integral solutions of $x + y + z = 0$ with $x \geq -5, y \geq -5, z \geq -5$ is a. 134 b. 136 c. 138 d. 140

Watch Video Solution

211. Find the number of non-negative integral solutions of the equation $x + y + z = 10$.

Watch Video Solution

212. If m parallel lines in a plane are intersected by a family of n parallel lines, the number of parallelograms that can be formed is a. $\frac{1}{4}mn(m-1)(n-1)$ b. $\frac{1}{4}mn(m-1)$ c. $\frac{1}{4}m^2n^2$ d. none of these

Watch Video Solution

213. Find the number of positive integral solutions of the equation $x+y+z=12$.

Watch Video Solution

214. The maximum number of points of intersection of five lines and four circles is (A) 60 (B) 72 (C) 62 (D) none of these

Watch Video Solution

215. Find the number of ways in which n different prizes can be distributed among $m(<n)$ persons if each is entitled to receive at most $n-1$ prizes.

Watch Video Solution

216. There are three coplanar parallel lines. If any p points are taken on each of the lines, the maximum number of triangles with vertices on these points is a. $3p^2(p-1)+1$ b. $3p^2(p-1)$ c. $p^2(4p-3)$ d. none of these

Watch Video Solution

217. How many ways n distinct objects be placed in 2 different boxes so that no box remains empty?

Watch Video Solution

218. Two packs of 52 cards are shuffled together. The number of ways in which a man can be dealt 26 cards so that he does not get two cards of the same suit and same denomination is a. $\hat{}\ 52C_{26}.\ 2^{26}$ b. $\hat{}\ 104C_{26}$ c. $\hat{}\ (52)C_{26}$ d. none of these

Watch Video Solution

219. Find the number of positive integral solutions of $xyz = 21600$.

Watch Video Solution

220. A student is allowed to select at most n books from a collection of (2n + 1) books. If the total number of ways in which he can select at least one book is 63, find the value of n.

Watch Video Solution

221. Find the number of positive integral solutions satisfying the equation $(x_1 + x_2 + x_3)(y_1 + y_2) = 77$.

Watch Video Solution

222. There are $(n+1)$ white and $(n+1)$ black balls, each set numbered $1 \to n+1$. The number of ways in which the balls can be arranged in a row so that the adjacent balls are of different colors is a. $(2n+2)!$ b. $(2n+2)! \times 2$ c. $(n+1)! \times 2$ d. $2\{(n+1)!\}^2$

Watch Video Solution

223. Roorkee University has to send 10 professors to 5 centers for its entrance examination, 2 to each center. Two of the enters are in Roorkee and the others are outside. Two of the professors prefer to

work in Roorkee while three prefer to work outside. In how many ways can this be made if the preferences are to be satisfied?

Watch Video Solution

224. Six cards and six envelopes are numbered 1, 2, 3, 4, 5, 6 and cards are to be placed in envelopes so that each envelope contains exactly one card and no card is placed in the envelope bearing the same number and moreover cards numbered 1 is always placed in envelope numbered 2. Then the number of ways it can be done is a. 264 b. 265 c. 53 d. 67

Watch Video Solution

225. In how many ways, two different natural numbers can be selected, which less than or equal to 100 and differ by at most 10.

Watch Video Solution

226. Consider the set of eight vector $V = \left\{a\hat{i} + b\hat{j} + c\hat{k}; a, bc \in \{-1, 1\}\right\}$. Three non-coplanar vectors can be chosen from V is 2^p ways. Then p is_____.

Watch Video Solution

227. The number of ways of selecting 10 balls from unlimited number of red, black, white and green balls, is

Watch Video Solution

228. Let $n \geq 2$ be integer. Take n distinct points on a circle and join each pair of points by a line segment. Color the line segment joining every pair of adjacent points by blue and the rest by red. If

the number of red and blue line segments are equal, then the value of n is

Watch Video Solution

229. There are 5 historical monuments, 6 gardens, and 7 shopping malls in a city. In how many ways a tourist can visit the city if he visits at least one shopping mall.

Watch Video Solution

230. Let $n_1 < n_2 < n_3 < n_4 < n_5$ be positive integers such that $n_1 + n_2 + n_3 + n_4 + n_5 = 20$. then the number of distinct arrangements n_1, n_2, n_3, n_4, n_5 is

Watch Video Solution

231. In an election, the number of candidates exceeds the number to be elected by 2. A man can vote in 56 ways. Find the number of candidates.

Watch Video Solution

232. A rectangle with sides of lengths $(2n-1)$ and $(2m-1)$ units is divided into squares of unit length. The number of rectangles which can be formed with sides of odd length, is (a) m^2n^2 (b) $mn(m+1)(n+1)$ (c) 4^{m+n-1} (d) non of these

Watch Video Solution

233. Find the number of odd proper divisors of $3^p \times 6^m \times 21^n$.

Watch Video Solution

234. If r, s, t are prime numbers and p, q are the positive integers such that their LCM of p, q is $r^2t^4s^2$, then the numbers of ordered pair of (p, q) is (A) 252 (B) 254 (C) 225 (D) 224

Watch Video Solution

235. Find the number of divisors of 720. How many of these are even? Also find the sum of divisors.

Watch Video Solution

236. In an examination of nine papers, a candidate has to pass in more papers than the number of paper in which he fails in order to be successful. The number of ways in which he can be unsuccessful is a. 256 b. 266 c. 193 d. 319

Watch Video Solution

237. How many different signals can be given using any number of flags from 5 flags of different colors?

Watch Video Solution

238. A student is allowed to select at most n books from a collection of (2n + 1) books. If the total number of ways in which he can select at least one book is 63, find the value of n.

Watch Video Solution

239. In how many ways can 6 persons stand in a queue?

Watch Video Solution

240. In an election, the number of candidates is one greater than the persons to be elected. If a voter can vote in 254 ways, the number of candidates is a. 7 b. 10 c. 8 d. 6

Watch Video Solution

241. Out of 10 white, 9 black, and 7 red balls, find the number of ways in which selection of one or more balls can be made (balls of the same color are identical).

Watch Video Solution

242. Two players $P_1 and P_2$ play a series of $2n$ games. Each game can result in either a win or a loss for $P_1 \cdot$ the total number of ways in which P_1 can win the series of these games is equal to

a. $\frac{1}{2}\left(2^{2n} - .^{2n} C_n\right)$

b. $\frac{1}{2}\left(2^{2n}-2\times .^{2n}C_n\right)$

c. $\frac{1}{2}\left(2^{n}-.^{2n}C_n\right)$

d. $\frac{1}{2}\left(2^{n}-2\times .^{2n}C_n\right)$

Watch Video Solution

243. Find the number of ways in which 8 different flowered can be strung to form a garland so that four particular flowers are never separated.

Watch Video Solution

244. Ten IIT and 2 DCE students sit in a row. The number of ways in which exactly 3 IIT student sit between 2 DCE students is (A) $.^{10}C_3\times 2!\times 3!\times 8!$ (B) $10!\times 2!\times 3!\times 8!$ (C) $5!\times 2!\times 9!\times 8!$ (D) none of these

Watch Video Solution

245. If $^{2n+1}P_{n-1}:^{2n-1}P_n = 3:5,$ then find the value of $n.$

Watch Video Solution

246. A team of four students is to be selected from a total of 12 students. The total number of ways in which the team can be selected such that two particular students refuse to be together and other two particular students wish to be together only is equal to a. 220 b. 182 c. 226 d. none of these

Watch Video Solution

247. If $^9P_5 + 5 \cdot {}^9P_4 = {}^{10}P_r,$ find the value of $r.$

Watch Video Solution

248. There are 2 women participating in a chess tournament. Every participant played 2 games with the other participants. The number of games that the men played between themselves exceeded by 66 as compared to the number of games that the men [played with women. If the number of participants is n , thn h vlule of $n-6$ is _____.

Watch Video Solution

249. Seven athletes are participating in a race. In how many ways can the first three athletes win the prizes?

Watch Video Solution

250. Two teams are to play a series of five matches between them. A match ends in a win, loss, or draw for a team. A number of people forecast the result of each match and no two people make the same

forecast for the series of matches. The smallest group of people in which one person forecasts correctly for all the matches will contain n people, where n is a. 81 b. 243 c. 486 d. none of these

Watch Video Solution

251. Prove that if $r \leq s \leq n, then^{n}P_{s}$ is divisible $by^{n}P_{r}$.

Watch Video Solution

252. The number of even divisor of the number $N = 12600 = 2^{3}3^{2}5^{2}7$ is

a. 72 b. 54 c. 18 d. none of these

Watch Video Solution

253. Find the number of zeros at the end of 130!.

Watch Video Solution

254. A candidate is required to answer 6 out of 10 questions, which are divide into two groups, each containing 5 questions. He is not permitted to attempt more than 4 questions from either group. The number of different ways in which the candidate can choose 6 questions is a. 50 b. 150 c. 200 d. 250

Watch Video Solution

255. Find the exponent of 3 in 100!

Watch Video Solution

256. If ${}^{10}P_r = 5040,$ find the value of r.

Watch Video Solution

257. Statement 1: Number of ways of selecting 10 objects from 42 objects of which 21 objects are identical and remaining objects are distinct is 2^{20}.

Statement 2: $\hat{}\ 42C_0 + {}^{42}C_1 + {}^{42}C_2 + \ + {}^{42}C_{21} = 2^{41}$.

(a) Statement 1 and Statement 2 , both are correct. Statement 2 is correct explanation for Statement 1.

(b) Statement 1 and Statement 2 , both are correct. Statement 2 is not the correct explanation for Statement 1.

(c) Statement 1 is correct but Statement 2 is not correct.

(d) Statement 2 is correct but Statement 1 is not correct.

Watch Video Solution

258. Find the number of zeros at the end in product $5^6.6^7.7^8.8^9.9^{10}.30^{31}$.

Watch Video Solution

Watch Video Solution

259. Statement 1: Number of ways in which Indian team (11 players) can bat, if Yuvraj wants to bat before Dhoni and Pathan wants to bat after Dhoni is $11\frac{!}{3}!$.

Statement 2: Yuvraj, Dhoni, and Pathan can be arranged in batting order in 3! ways.

(a) Statement 1 and Statement 2, both are correct. Statement 2 is the correct explanation for Statement 1

(b) Statement 1 and Statement 2, both are correct. Statement 2 is not the correct explanation for Statement 1

(c) Statement 1 is correct but Statement 2 is not correct.

(d) Both Statement 1 and Statement 2 are not correct.

Watch Video Solution

260. In how any different ways can a set A of $3n$ elements be partitioned into 3 subsets of equal number of elements? The subsets P, Q, R form a partition if $P \cup Q \cup R = A, P \cap R = \varphi, Q \cap R = \varphi, R \cap P = \varphi.$

Watch Video Solution

261. Statement 1: When number of ways of arranging 21 objects of which r objects are identical of one type and remaining are identical of second type is maximum, then maximum value of $\hat{}\ 13C_r is 78.$ Statement 2: $\hat{}\ 2n + 1C_r$ is maximum when $r = n.$

Watch Video Solution

262. If $a, b, \in \{1, 2, 3, 4, 5, 6, \}$, find the number of ways $aandb$ can be selected if $\left(\lim \right)_{x \to 0} \left(\frac{a^x + b^x}{2} \right)^{\frac{2}{x}} = 6.$

Watch Video Solution

263. Statement 1: let $E = \{1, 2, 3, 4\} and F = \{a, b\}$ Then the number of onto functions from $E \to F$ is 14.

Statement 2: Number of ways in which four distinct objects can be distributed into two different boxes is 14 if no box remains empty.

(a) Statement 1 and Statement 2, both are correct. Statement 2 is the correct explanation for Statement 1

(b) Statement 1 and Statement 2, both are correct. Statement 2 is not the correct explanation for Statement 1

(c) Statement 1 is correct but Statement 2 is not correct.

(d) Both Statement 1 and Statement 2 are not correct.

Watch Video Solution

264. In how many ways can Rs. 16 be divided into 4 persons when none of them gets less than Rs. 3?

Watch Video Solution

265. Lines 2x – by + 5 = 0 and ax + 3y = 2 are parallel. Find the relation connecting a and b.

Watch Video Solution

266. Find the number ordered pairs (x, y) if $x, y \in \{0, 1, 2, 3, , 10\} and$ if $|x - y| > 5.$

Watch Video Solution

267. Find the equation of the line passing through the point (2, – 5) and making an intercept of – 3 on the y-axis.

Watch Video Solution

268. n different toys have to be distributed among n children. Find the number of ways in which these toys can be distributed so that exactly one child gets no toy.

Watch Video Solution

269. Statement 1: The number of ways in which three distinct numbers can be selected from the set $\{3^1, 3^2, 3^3, , 3^{100}, 3^{101}\}$ so that they form a G.P. is 2500.

Statement 2: if a, b, c are in A.P., then 3^a, 3^b, 3^c are in G.P.

(a) Statement 1 and Statement 2, both are correct. Statement 2 is the correct explanation for Statement 1

(b) Statement 1 and Statement 2, both are correct. Statement 2 is not the correct explanation for Statement 1

(c) Statement 1 is correct but Statement 2 is not correct.

(d) Both Statement 1 and Statement 2 are not correct.

Watch Video Solution

Watch Video Solution

270. Statement 1: Total number of five-digit numbers having all different digit divisible by 4 can be formed using the digits $\{1, 3, 2, 6, 8, 9\}$ is 192.

Statement 2: A number is divisible by 4, if the last two digits of the number are divisible by 4.

(a) Statement 1 and Statement 2, both are correct. Statement 2 is the correct explanation for Statement 1

(b) Statement 1 and Statement 2, both are correct. Statement 2 is not the correct explanation for Statement 1

(c) Statement 1 is correct but Statement 2 is not correct.

(d) Both Statement 1 and Statement 2 are not correct.

Watch Video Solution

271. Find the number of ways of dividing 52 cards among four players equally.

Watch Video Solution

272. Find the number of ways in which the number 300300 can be split into two factors which are relatively prime.

Watch Video Solution

273. The number of words of four letters that can be formed from the letters of the word EXAMINATION is a. 1464 b. 2454 c. 1678 d. none of these

Watch Video Solution

274. Find the number of ways in which 8 non-identical apples can be distributed among 3 boys such that every boy should get at least 1 apple and at most 4 apples.

Watch Video Solution

275. The number of ways in which the letters of the word PERSON can placed in the squares of the given figure so that no row remains empty is a. $24 \times 6!$ b. $26 \times 6!$ c. $26 \times 7!$ d. $27 \times 6!$

Watch Video Solution

276. Find the number of ways to give 16 different things to three persons A, B, C so that B gets 1 more than A and C gets 2 more than B.

Watch Video Solution

277. There are two bags can each of which contains n balls. A man has to select an equal number of balls from both the bags. Prove that the number of ways in which a man can choose at least one ball from each bag is $\hat{} \ 2nC_n - 1$.

Watch Video Solution

278. Find the total number of proper factors of the number 35700. Also find (1)sum of all these factors (2)sum of the odd proper divisors (3)the number of proper divisors divisible by 10 and the sum of these divisors.

Watch Video Solution

279. In how many ways can a team of 6 horses be selected out of a stud of 16, so that there shall always be three out of A B C A' B' C', but never A A', B B' or C C' together a. 840 b. 1260 c. 960 d. 720

Watch Video Solution

280. There are 3 books of mathematics, 4 of science, and 5 of literature. How many different collections can be made such that each collection consists of one book of each subject.

Watch Video Solution

281. Number of ways in which a lawn-tennis mixed double be made from seven married couples if no husband and wife play in the same set is a. 240 b. 420 c. 720 d. none of these

Watch Video Solution

282. Find the number of divisors of the number $N = 2^3.3^5.5^7.7^9$ which are perfect squares.

Watch Video Solution

283. Find the equation of a line, which has the y-intercept 4, and is parallel to the line 2x – 3y – 7 = 0. Find the coordinates of the point where it cuts the x-axis.

Watch Video Solution

284. Find the number of ways in which the number 94864 can be resolved as a product of two factors.

Watch Video Solution

285. A class contains three girls and four boys. Every Saturday, five go on a picnic (a different group of students is sent every week). During the picnic, each girl in the group is given a doll by the accompanying teacher. If all possible groups of five have gone for picnic once, the total number of dolls that the girls have got is a. 21 b. 45 c. 27 d. 24

Watch Video Solution

286. Show that $1! + 2! + 3! + \ + n!$ cannot be a perfect square for any $n \in N, n \geq 4$.

Watch Video Solution

287. If all the words formed from the letters of the word HORROR are arranged in the opposite order as they are in a dictionary then the rank of the word HORROR is a. 56 b. 57 c. 58 d. 59

Watch Video Solution

288. Prove that $\frac{2n!}{n!} = \{1.3.5.... . (2n-1)\}2^n$

Watch Video Solution

289. Find the equation of a straight line perpendicular to the line 2x + 5y + 7 = 0 and with y-intercept – 3 units.

Watch Video Solution

290. The letters of word ZENITH are written in all possible ways. If all these words are written out as in a dictionary, then find the rank of the word ZENITH.

Watch Video Solution

291. In a class tournament, all participants were to plan different game with one another. Two players fell ill after having played three games each. If the total number of games played in the tournament is equal to 84, the total number of participants in the beginning was equal to a. 10 b. 15 c. 12 d. 14

Watch Video Solution

292. How many different words can be formed with the letters of the word "MATHEMATICS"

Watch Video Solution

293. There are 720 permutations of the digits 1, 2, 3, ,4 ,5, 6. Suppose these permutations are arranged from smallest to largest

numerical values, beginning from 123456 and ending with 654321. Then the digit in unit place of number at 267th position is_____.

Watch Video Solution

294. Find the equation of the line passing through (0, 4) and parallel to the line $3x + 5y + 15 = 0$

Watch Video Solution

295. Find the equation of the line that is perpendicular to $3x + 2y - 8 = 0$ and passes through the mid-point of the line segment joining the points $(5, -2)$ and $(2, 2)$.

Watch Video Solution

296. How many different numbers of 4 digits can be formed from the digits 0, 1, 2, ...9 if repetition is allowed.

Watch Video Solution

297. How many six-digit odd numbers, greater than 6,00,000, can be formed from the digits 5, 6, 7, 8, 9, and 0 if repetition of digits is allowed .

Watch Video Solution

298. Eleven animals of a circus have to be placed in eleven cages (one in each cage), if 4 of the cages are too small for 6 of the animals, then find the number of the ways of caging all the animals.

Watch Video Solution

299. If $A = \{x \mid x$ is prime number and $x < 30\}$, find the number of different rational numbers whose numerator and denominator belong to A.

Watch Video Solution

300. Find the sum of first 22 terms, of an A.P. in which d = 7 and 22th term is 149.

Watch Video Solution

301. How any 4-letters words, with or without meaning, can be formed out of the letters in the word LOGARITHMS, if repetition of letters is not allowed?

Watch Video Solution

302. Find the numbers of positive integers from 1 to 1000, which are divisible by at least 2, 3, or 5.

Watch Video Solution

303. Find the number of ways in which two Americans, two British, one Chinese, one Dutuch, and one Egyptian can sit on a round table so that persons of the same nationality are separated.

Watch Video Solution

304. Find the number of permutations of letters a, b, c, d, e, f, g taken all together if neither beg nor cad pattern appear.

Watch Video Solution

305. Find the number of n digit numbers, which contain the digits 2 and 7, but not the digits 0, 1, 8, 9.

Watch Video Solution

306. There are 4 balls of different colours and four boxes of colours same as these of the balls the number of ways in which the balls one in each box would be placed such that a ball does not go to a box of its own colour is

Watch Video Solution

307. Seven people leave their bags outside at temple and returning after worshiping picked one bag each at random. In how many ways at least one and at most three of them get their correct bags?

Watch Video Solution

308. In how many ways 5 different balls can be distributed into 3 boxes so that no box remains empty ?

Watch Video Solution

309. Four buses run between Bhopal and Gwalior. If a man goes from Gwalior to Bhopal by a bus and comes back to Gwalior by another bus, find the total possible ways.

Watch Video Solution

310. A gentle man wants to invite six friends. In how many ways can he send invitation cards to them, if he has three servants to carry the cards.

Watch Video Solution

311. Find the total number of ways of answering five objective type questions, each question having four choices

Watch Video Solution

312. In how many ways the number 7056 can be resolved as a product of 2 factors.

Watch Video Solution

313. A double-decker bus carry $(u+l)$ passengers, u in the upper deck and l in the lower deck. Find the number of ways in which the $u+l$ passengers can be distributed in the two decks, if $r(\leq l)$ particular passengers refuse to go in the upper deck and $s(\leq u)$ refuse to sit in the lower deck.

Watch Video Solution

Watch Video Solution

314. Prove that $(n! + 1)$ is not divisible by any natural number between 2 and n

Watch Video Solution

315. Find the number of different signals that can be generated by arranging at least 2 flags in order (one below the other) on a vertical staff, if five different flags are available.

Watch Video Solution

316. How many two-digit even numbers can be formed from the digits 1,2, 3, 4, 5 if the digits can be repeated?

Watch Video Solution

317. Find the sum of given below: 34 + 32 + 30 + ... + 10

Watch Video Solution

318. Find the remainder when $1! + 2! + 3! + 4! + \ldots\ldots + n!$ is divided by 15, if $n \geq 5$.

Watch Video Solution

319. Find whether 55 is a term of the A.P. 7, 10, 13, ... or not. If yes, find which term is it.

Watch Video Solution

320. Find the total number of two-digit numbers (having different digits), which is divisible by 5.

Watch Video Solution

321. Find the A.P. whose nth term is 7 – 3K. Also find the 20th term.

Watch Video Solution

322. Given that (a, 2a) lies on the line y/2 = 3x – 6. Find the value of a.

Watch Video Solution

323. Find the number of distinct rational numbers x such that $o < x < 1$ and $x = p/q$, where $p, q \in \{1, 2, 3, 4, 5, 6\}$.

Watch Video Solution

324. Three dice are rolled. Find the number of possible outcomes in which at least one dice shows 5.

Watch Video Solution

325. In how many ways 14 identical toys be distributed among three boys so that each one gets atleast one toy and no two boys get equal no of toys ?

Watch Video Solution

326. Find the equation of the line passing through the point (1, 4) and intersecting the line $x - 2y - 11 = 0$ on the y-axis.

Watch Video Solution

327. Find the number of non negative integral solutions of $x_1 + x_2 + x_3 + 4x_4 = 20$

Watch Video Solution

328. If the common difference of an A.P. is – 3 and the 18th term is – 5, then find its first term.

Watch Video Solution

329. In how many different ways can 3 persons A, B, C having 6 one-rupee coin 7 one-rupee coin, 8 one-rupee coin, respectively, donate 10 one-rupee coin collectively?

Watch Video Solution

330. If $6x + 5y - 7 = 0$ and $2px + 5y + 1 = 0$ are parallel lines, find the value of p.

Watch Video Solution

331. In how many ways 3 boys and 15 girls can sits together in a row such that between any 2 boys at least 2 girls sit.

Watch Video Solution

332. If the lines $y = 3x + 7$ and $2y + px = 3$ perpendicular to each other, find the value of p

Watch Video Solution

333. If the 11 letters A, B, ..., K denote an arbitrary permutation of he integers $(1, 2, ; 11)$, then $(A-1)(B-2)(C-3)...(K-11)$ will be a. necessarily zero b. always odd c. always even d. none of these

Watch Video Solution

334. In how many ways can four people, each throwing a dice once, make a sum of 6?

Watch Video Solution

335. If the straight lines kx – 5y + 4 = 0 and 4x – 2y + 5 = 0 are perpendicular to each other. Find the value of k.

Watch Video Solution

336. In how many ways can 5 girls and 3 boys be seated in a row so that no two boys are together ?

Watch Video Solution

337. If 9^{th} term of an A.P. is zero, prove that its 29^{th} term is double the 19^{th} term.

Watch Video Solution

338. In how many ways can four people, each throwing a dice once, make a sum of 6?

Watch Video Solution

339. Find n, if $(n+1)! = 12 \times (n-1)!$.

Watch Video Solution

340. Three numbers are in AP. If theirsum is 27 and their product is 648. Find the numbers.

Watch Video Solution

341. Find the total number of integers 'n' such that $2 \leq n \leq 2000$ and H.C.F of n and 36 is 1.

Watch Video Solution

342. The number of polynomials of the form $x^3 + ax^2 + bx + c$ which are divisible by $x^2 + 1$ and where a, b , c belong to {1,2,....,10}

Watch Video Solution

343. Find the number of diagonals in a polygon with n sides.

Watch Video Solution

344. Find the total number of n -digit number $(n > 1)$ having property that no two consecutive digits are same.

Watch Video Solution

345. Prove that $(n!)^2 < n^n n! < (2n)!$, for all positive integers n.

Watch Video Solution

346. Find the sum of the series $\sum_{r=1}^{n} \frac{r}{(r+1)!}$.

Watch Video Solution

347. Find the exponent of 80 in 200!.

Watch Video Solution

348. Prove that $.^{n} P_{r} = ^{n-1} P_{r} + r^{n-1} P_{r-1}$

Watch Video Solution

349. How many ways are there to seat n married couples $(n \geq 3)$ around a table such that men and women alternate and each women is not adjacent to her husband.

Watch Video Solution

350. A round-table conference is to be held among 20 delegates belonging from 20 different countries. In how many ways can they

be seated if two particular delegates are (i) always to sit together, (ii) never to sit together .

Watch Video Solution

351. How many numbers can be formed from the digits 1, 2, 3, 4 when repetition is not allowed?

Watch Video Solution

352. Find the three-digit odd numbers that can be formed by using the digits 1, 2, 3, 4, 5, 6 when the repetition is allowed.

Watch Video Solution

353. If $^{n}P_{5}=20^{n}P_{3}$ find the value of n

Watch Video Solution

Watch Video Solution

354. Find the total number of ways of selecting five letters from the word INDEPENDENT.

Watch Video Solution

355. Passengers are to travel by a double decked bus which can accommodate 13 in the upper deck and 7 in the lower deck. Find the number of ways that they can be distributed if 5 refuse to sit in the upper deck and 8 refuse to sit in the lower deck.

Watch Video Solution

356. Simplify the following and express it in the form $(a+ib)$: $(3+4i)(2-3i)$

Watch Video Solution

357. In a conference 10 speakers are present. If S_1 wants to speak before $S_2 and S_2$ wants to speak after S_3, then find the number of ways all the 10 speakers can give their speeches with the above restriction if the remaining seven speakers have no objection to speak at any number.

Watch Video Solution

358. Five boys and five girls sit alternately around a round table. In how many ways can this be done?

Watch Video Solution

359. A regular polygon of 10 sides is constructed. In how many way can 3 vertices be selected so that no two vertices are consecutive?

Watch Video Solution

360. If (n+3)! =56 x (n+1)!, Find the value of n.

Watch Video Solution

361. If $.^{15}C_{3r}:^{15}C_{r+1}=11:3$, find the value of r.

Watch Video Solution

362. If the ratio $.^{2}nC_{3}:^{n}C_{3}$ is equal to 11:1 find n.

Watch Video Solution

363. There are n married couples at a party. Each person shakes hand with every person other than her or his spouse. Find the total

no. of hand shakes.

Watch Video Solution

364. Twenty-eight games were played in a football tournament with each team playing once against each other. How many teams were there?

Watch Video Solution

365. Find the 28th term from the end term of the AP 6, 9, 12, 15, 18, ..., 102

Watch Video Solution

366. In a network of railways, a small island has 15 stations. Find the number of different types of tickets to be printed for each class, if

every stations must have tickets for other stations.

Watch Video Solution

367. A person tries to form as many different parties as he can, out of his 20 friends. Each party should consist of the same number. How many friends should be invited at a time? In how many of these parties would the same friends be found?

Watch Video Solution

368. Find the number of ways of selecting 3 pairs from 8 distinct objects.

Watch Video Solution

369. Out of 10 consonants and 4 vowels, how many words can be formed each containing 3 consonants and 2 vowels?

Watch Video Solution

370. In how many of the permutations of n thing taken r at a time will three given things occur?

Watch Video Solution

371. Which term of the GP 3,6,12,24, ... is 3072?

Watch Video Solution

372. If $.^{56}P_{r+6} : .^{54}P_{r+3} = 30800 : 1$, find r.

Watch Video Solution

373. Five persons entered the lift cabin on the ground floor of an 8-floor house. Suppose each of them can leave the cabin independently at any floor beginning with the first. The probability of all five persons leaving at different floors, is

Watch Video Solution

374. In how many ways first and second rank in mathematics, first and second rank in physics, first rank in chemistry, and first rank in English be given away to a class of 30 students.

Watch Video Solution

375. Find the number of nonzero determinant of order 2 with elements 0 or 1 only.

Watch Video Solution

376. If $p, q \in \{1, 2, 3, 4, \}$, then find the number of equations of form $px^2 + qx + 1 = 0$ having real roots.

Watch Video Solution

377. Nishi has 5 coins, each of the different denomination. Find the number different sums of money she can form.

Watch Video Solution

378. Find the number of groups that can be made from 5 different green balls, 4 different blue balls and 3 different red balls, if atleast 1 green and 1 blue ball is to be included.

Watch Video Solution

379. Find the number of natural numbers which are less than 2×10^8 and which can be written by means of the digit 1 and 2.

Watch Video Solution

380. Find the number of ways in which two small squares can be selected on the normal chessboard if they are not in same row or same column.

Watch Video Solution

381. Find the number of ways of selection of at least one vowel and one consonant from the word TRIPLE.

Watch Video Solution

382. There are p copies each of n different books. Find the number of ways in which a nonempty selection can be made from them.

Watch Video Solution

383. A person is permitted to selected at least one and at most n coins from a collection of $(2n+1)$ distinct coins. If the total number of ways in which he can select coins is 255, find the value of n.

Watch Video Solution

384. Let $S=\{1,2,3,\ldots\ldots\ldots\ldots.n\}$ and $A=\{(a,b)|1\leq a,b\leq n\}=S\times S$. A subset B of A is such that $(x,x)\in B$ for every $x\in S$. Then find the number of subsets B.

Watch Video Solution

385. A person invites a group of 10 friends at dinner and sits (i) 5 on a round table and 5 on other round table (ii) 4 on one round table 6 on other round table . Find no. of ways in each case in which he can arrange the guest?

Watch Video Solution

386. Find the number of ways in which 10 different diamonds can be arranged to make a necklace.

Watch Video Solution

387. Which of the term of the AP 53, 48, 43... is the first negative term?

Watch Video Solution

388. Find the number of ways in which six persons can be seated at a round table, so that all shall not have the same neighbours n any two arrangements.

Watch Video Solution

389. Determine the A.P whose third term is 16 and 7th exceeds the 5th term by 12.

Watch Video Solution

390. Find the maximum number of points of intersection of 6 circles.

Watch Video Solution

391. Find the number of different words that can be formed using all the letters of the word DEEPMALA if two vowels are together and the other two are also together but separated from the first two.

Watch Video Solution

392. The number 916238457 is an example of a nine-digit number which contains each of the digit 1 to 9 exactly once. It also has the property that the digits 1 to 5 occur in their natural order, while the digits 1 to 6 do not. Find the number of such numbers.

Watch Video Solution

393. In a Δ ABC, Prove that, $\frac{\cos A}{a}+\frac{\cos B}{b}+\frac{\cos C}{c}=\frac{a^2+b^2+c^2}{2}$

Watch Video Solution

394. Find the total number of rectangles on the normal chessboard.

Watch Video Solution

395. There are 10 points on a plane of which no three points are collinear. If lines are formed joining these points, find the maximum points of intersection of these lines.

Watch Video Solution

396. Find the maximum number of points of intersection of 7 straight lines and 5 circles when 3 straight lines are parallel and 2 circle and concentric.

Watch Video Solution

397. A box contains 5 different res and 6, different whit balls. In how many ways can 6 balls be selected so that there are at least two balls off each color?

Watch Video Solution

398. Find number of ways that 8 beads of different colors be strung as a necklace.

Watch Video Solution

399. Find the number of ways in which 6 men and 5 women can dine at around table if no two women are to sit so together.

Watch Video Solution

400. For an examination a candidate has to select 7 subjects from 3 different groups A,B,C which contain 4,5,6 subjects respectively in how many different ways can a candidate make his selection if he has to select at least 2 subjects from each group?

Watch Video Solution

401. In how many ways the letters of the word COMBINATORICS can be arranged if all vowel and all consonants are alphabetically ordered.

Watch Video Solution

402. A question paper on mathematics consists of 12 questions divided into 3 parts A, B and C, each containing 4 questions. In how

many ways can an examinee answer 5 questions selecting at least one from each part.

Watch Video Solution

403. Find the number of all three elements subsets of the set $\{a_1, a_2, a_3, \ldots\ldots\ldots . a_n\}$ which contain a_3.

Watch Video Solution

404. A bag contains 50 tickets numbered 1, 2, 3, .., 50 of which five are drawn at random and arranged in ascending order of magnitude$(x_1 < x_2 < x_3 < x_4 < x_5)$ find the probability that $x_3 = 30$.

Watch Video Solution

405. Four visitors A, B, C, D arrived at a town that has 5 hotels. In how many ways, can they disperse themselves among 5 hotels.

Watch Video Solution

406. about to only mathematics

Watch Video Solution

407. Out of 8 sailors on a boat, 3 can work only on one particular side and 2 only on the other side. Find the number of ways in which the sailors can be arranged on the boat.

Watch Video Solution

408. In how many ways can 3 ladies and 3 gentlemen be seated around a round table so that any two and only two of the ladies sit together?

Watch Video Solution

409. In how many ways can 15 members of a council sit along a circular table, when the secretary is to sit on one side of the chairman and the deputy secretary on the other side?

Watch Video Solution

410. Find the number of ways in which 5 girls and 5 boys can be arranged in a row if boys and girls are alternative.

Watch Video Solution

411. Find $.^5 P_2$

Watch Video Solution

412. Evaluate the following

$.^5 P_3$

Watch Video Solution

413. Find the number of ways in which $5A's$ and $6B's$ can be arranged in a row which reads the same backwards and forwards.

Watch Video Solution

414. How many four-digit numbers can be formed by using the digits 1, 2, 3, 4, 5, 6, 7 if at least one digit is repeated.

Watch Video Solution

415. There are six periods in each working day of the school. In how many ways can one arrange 5 subjects such that each subject is allowed at least one period?

Watch Video Solution

416. Find the number of permutation of all the letters of the word MATHEMATICS which starts with consonants only.

Watch Video Solution

417. Find $5P_3$

Watch Video Solution

418. In how many ways can 30 marks be allotted to 8 question if each question carries at least 2 marks?

Watch Video Solution

419. Find the number of arrangements of the letters of the word SALOON, if the two O's do not come together.

Watch Video Solution

420. If the best and the worst paper never appear together, find in how many ways six examination papers can be arranged.

Watch Video Solution

421. Find the probability that the birth days of six different persons will fall in exactly two calendar months.

Watch Video Solution

422. A committee of 6 is chosen from 10 men and 7 women so as to contain at least 3 men and 2 women. In how many ways can this be done if two particular women refuse to serve on the same committee? a. 850 b. 8700 c. 7800 d. none of these

Watch Video Solution

423. If $.^{n+2}C_8 :^{n-2}P_4 : : 57 : 16,$ find n

Watch Video Solution

424. Find the number of positive integers, which can be formed by using any number of digits from 0, 1, 2, 3, 4, 5 but using each digit not more than once in each number. How many of these integers are greater than 3000? What happened when repetition is allowed?

Watch Video Solution

425. Write the first four terms of the A.P. when its first term is – 5 and the common difference is – 3.

Watch Video Solution

426. In how many ways can 5 girls and 5 boys be arranged in a row if all boys are together.

Watch Video Solution

427. Solve: $a_n = \frac{3n^2}{2} + \frac{5n}{2}$ Find the 25th term.

Watch Video Solution

428. If there are 12 persons in a party, and if each two of them shake hands with each other, how many handshake happen in the party?

Watch Video Solution

429. Find the ratio of $.^{20}C_r$ and $.^{25}C_r$ when each of them has the greatest possible value.

Watch Video Solution

430. If $a, b, c \in \{1, 2, 3, 4, 5, 6, \}$ find the number of ways a, b, c can be selected if $f(x) = x^3 + ax^2 + bx + c$ is an increasing function.

Watch Video Solution