MATHS

BOOKS - PATHFINDER MATHS (BENGALI ENGLISH)

PERMUTATION AND COMBINATION

Question Bank

1. If $m(>n)$ and n be two positive integers then product n(n-1)(n-2)..... (n-m) in the factorial form is

A. $\frac{n!}{(n-m+1)!}$

B. $\frac{n!}{(n-m-1)!}$

C. $\frac{n!}{(n+m-1)!}$

D. $\frac{n!}{(n+m+1)!}$

Answer: B

Watch Video Solution

2. The value of $\frac{n!}{(n-2)!}$ is

A. n(n-1)

B. (n-1)(n-2)

C. (n+1)(n)

D. (n-2)(n-3)

Answer: A

Watch Video Solution

3. The result of $\hat{}\ (n-1)C_r + \hat{}^{n-1}C_{r-1} =$

A. $\hat{}\ nC_{r-1}$

B. $\hat{}\ (n+1)C_r$

C. $\hat{}\ nC_r$

D. $\hat{}\ (n+1)C_{r-1}$

Answer: C

Watch Video Solution

4. If $\hat{}\ nC_p = {}^n C_q$ and $p \neq q$ then (n-p) is

A. -q

B. q

C. n-q

D. -2q

Answer: B

Watch Video Solution

5. If $nC_r + nC_{r+1} = (n+1)C_x$ then x=?

A. a) r

B. b) r-1

C. c) n

D. d) r+1

Answer: D

Watch Video Solution

6. ˆ $11C_8 + ^{11} C_9 =$ which of the following

A. 440

B. 330

C. 220

D. 110

Answer: C

Watch Video Solution

7. If $16C_r =^{16} C_{2r+1}$ then the value of r will be

A. 6

B. 5

C. 4

D. 3

Answer: B

Watch Video Solution

8. If $\hat{} \ 9P_5 = x^9 P_3$ then the value of x will be

A. 56

B. 42

C. 30

D. 20

Answer: C

Watch Video Solution

9. If $^{\wedge} nP_r = ^n P_{r+1}$ and $^{\wedge} nC_r = ^n C_{r-1}$ then the values of n,r are

A. n=2, r=3

B. n=3, r=2

C. n=4, r=2

D. n=2, r=4

Answer: B

Watch Video Solution

10. The value of $\sum_{r=1}^{n} \frac{^{\wedge} nP_r}{r!}$ is

A. 2^n

B. $2^n - 1$

C. 2^{n-1}

D. $2^n + 1$

Answer: B

Watch Video Solution

11. 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

A. 5

B. 7

C. 6

D. 4

Answer: B

Watch Video Solution

12. The number of parallelograms that can be formed from a set of four parallel straight lines intersecting another set of three parallel straight lines is

A. 6

B. 18

C. 12

D. 9

Answer: B

Watch Video Solution

13. A polygon has 44 diagonals the number of sides of the polygon is

A. 11

B. 7

C. 8

D. 9

Answer: A

Watch Video Solution

14. In a room each person present shakes hand with the other . If the total number handshakes is 66 the number of persons present inn the room is

A. 11

B. 12

C. 13

D. 14

Answer: B

Watch Video Solution

15. The value of : $\hat{}\ 15C_1 +^{15} C_3 +^{15} C_5 + \ldots . +^{15} C_{15}$ is

A. 15×16

B. 2^{15}

C. 15×2^8

D. 2^{14}

Answer: D

Watch Video Solution

16. The number of 10 digit numbers formed by using the digits 1&2 is

A. $\hat{}\ 10C_1 +^9 C_2$

B. 2^{10}

C. $10!$

D. $\hat{}\ 10C_2$

Answer: B

Watch Video Solution

17. The maximum number of trials to open n locks by n keys is 105. Then n is

A. 13

B. 35

C. 14

D. 27

Answer: C

Watch Video Solution

18. The number of circles that can be drawn out of 10 points of which 7 are collinear is

A. 120

B. 113

C. 85

D. 86

Answer: C

Watch Video Solution

19. The number of different 6-digit numbers that can be formed using the three digits 0,1,2 is

A. 3^6

B. 3^5

C. 2×3^5

D. 3×2^5

Answer: C

Watch Video Solution

20. The number of ways in which 6 different balls can be put in two boxes of different sizes so that no box remain empty is :

A. 62

B. 64

C. 36

D. 72

Answer: A

Watch Video Solution

21. If 7 points out of 12 are in same st. line the number of triangles formed by them is

A. 19

B. 185

C. 201

D. 215

Answer: B

Watch Video Solution

22. The total number of 9 digit numbers which have all different digit is

A. $10!$

B. $9!$

C. $9(9)!$

D. $8(9)!$

Answer: C

Watch Video Solution

23. The number of ways in which 5 letters can be posted in 10 letter boxes is

A. 50

B. $\hat{} \ 10P_5$

C. 5^{10}

D. 10^5

Answer: D

Watch Video Solution

24. The number of five digit telephone numbers none of their digits being repeated is

A. 50

B. $\hat{} \ 10P_5$

C. 5^{10}

D. 10^5

Answer: B

Watch Video Solution

25. There are 13 stations on a certain railway line.How many kinds of different single third class tickets have to be printed in order that it may be possible to travel from any station to any other?

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

28. A man has 6 friends. In how many ways can he invite one or more of them to a party?

Watch Video Solution

29. Find the value of n $\hat{}\ 2nC_4 :^n C_3 = 35:2$

Watch Video Solution

30. If $,^n C_1,^n C_2$ and $^nC_3$ are in AP. Find the value of n.

Watch Video Solution

31. How many numbers of 5 digits can be formed with the digits 0,2,5,6,7 without taking any of these digits more than once.

Watch Video Solution

32. A child has 6 pockets and 4 coins.Find the number of ways the child can put the coins in the pocket.

Watch Video Solution

33. Find the number of ways in which one or more letters can be selected from the letters PPPQQQQRRRRRSTUV.

Watch Video Solution

34. If n parallel straight line in a plane are intersected by a family of m parallel lines, how many parallelograms are there in the network thus

formed?

Watch Video Solution

35. Prove that product of any r consecutive natural numbers is always divisible by $r!$

Watch Video Solution

36. If $\frac{nP_{r-1}}{a} = \frac{nP_r}{b} = \frac{nP_{r+1}}{c}$ then show that $b^2 - ab - ac = 0$

Watch Video Solution

37. Prove that $33!$ is divisible by 2^{16}

Watch Video Solution

38. Find the value of k if $\hat{}\left(k^2 - 2k\right)C_9 = \hat{}\left(k^2 - 2k\right)C_6$

Watch Video Solution

39. If $\hat{}\ {}^{n}P_{r} = 336$ and $\hat{}\ {}^{n}C_{r} = 56$ then find n and r.

Watch Video Solution

40. If $2 \leq r \leq n$ show that $\hat{}\ {}^{n}C_{r} + 2{}^{n}C_{r-1} + {}^{n}C_{r-2} = {}^{n+2}C_{r}$

Watch Video Solution

41. Find the number of different factors of 3528 which are greater than 1 and less than 3528

Watch Video Solution

42. In a plane there are 10 points out of which no three are collinear except the four which lie on a straight line . By joining these 10 points

how many straight lines.

Watch Video Solution

43. In a plane there are 10 points out of which no three are collinear except the four which lie on a straight line . By joining these 10 points how many triangles may be obtained.

Watch Video Solution

44. In how many ways can be 9 man be selected from 15 men so as always to exclude 3 particular man.

Watch Video Solution

45. In how many ways can be 9 man be selected from 15 men so as always to Include 3 particular man.

Watch Video Solution

46. How many each consisting of five different letters can be formed by taking 2 consonants from 9 different consonants and 3 vowels from 5 different vowels?

Watch Video Solution

47. In how many ways can six students be seated in a line so that two particular students do not sit together?

Watch Video Solution

48. Find the value of x if $\hat{}\ (4x-2)P_2 = 6$

Watch Video Solution

49. In how many ways can 5 boys and 3 girls be arranged so that no two girls will sit side by side.

Watch Video Solution

50. Find the number of different arrangements with the letters of the word 'ALGEBRA' so that the two A'a are not together?

A. In the word 'ALGEBRA', there are 2A's, one each of L, G, E, B, R. $\therefore$ Number of possible arrangement of the letters=$\frac{7!}{2!} = 2520$, For 2A's together the number of arrangement=$6!$, $\therefore$ required number of arrangements = $2520 - 6! = 2520 - 720 = 1800.$

B.

C.

D.

Answer:

Watch Video Solution

51. How many numbers of 4 digit greater than 6000 can be formed with the digits 3,4,5,6,8? (no digit is repeated in any number). How many of these numbers so formed.

Watch Video Solution

52. A book store has 2 different books each having 3 volumes and 3 other different books, each having 2 volumes be arranged in a shelf, so that the volumes of the same book may remain side by side ?

Watch Video Solution

53. From 5 oranges, 4 mangoes and 2 apples, how many different selection of fruits can be made taking at least one of each kind, if the fruits of the same kind are of different shapes ?

Watch Video Solution

54. For a certain class, in how many different routines can the 5 different subjects be alloted in 6 different periods ?

Watch Video Solution

55. An examine is required to answer 6 questions out of 12 questions which are divided into two groups each containing 6 questions, and he is not permitted to answer more than 4 questions from any group. In how many ways can be answered 6 questions ?

Watch Video Solution

56. Find the number of permutations of the letters of the words 'FORECAST' and 'MILKY' taking 5 at a time of which 3 letters from the first word and 2 from the second.

Watch Video Solution

57. How many triangles can be formed by joining the angular points of a decagon ? How many diagonals will it have ?

Watch Video Solution

58. Show that $1 +^{1} P_1 + 2.^{2} P_2 + 3.^{3} P_3 + ... + n.^{n} P_n =^{n+1} P_{n+1}$.

Watch Video Solution

59. Out of 14 articles, 10 are of the same type and each of the remaining is of different type. Find the number of combinations if 10 articles are taken at a time ?

Watch Video Solution

60. Find the rank of the word 'MAKE' when its letters are arranged as in a dictionary.

Watch Video Solution

61. Find the number of ways in which the letters of the word 'INTERMEDIATE' can be arranged taken all at a time so that the vowels are not all together.

Watch Video Solution

62. How many seven-digit numbers are there, the sum of whose digit is even?

Watch Video Solution

63. How many five-digit telephone numbers are there, the sum of whose digits is even ?

Watch Video Solution

64. How many 4 digit numbers can be formed from the digits 1, 1, 2, 2, 3, 3, 4, 5 ?

Watch Video Solution

65. Find the number of students to be selected at a time from a group of 14 students so that the number of sections is greatest. find the greatest number of selection. Also find the greatest number of selections when there are 15 students.

Watch Video Solution

66. Find the sum of the five digit numbers formed by the digits 2, 3, 4, 5, 6 .

Watch Video Solution

67. A boat has a crew of 8 men of which 2 can row only on one side and only on the other. In how, many ways can the crew be arranged equally both sides in the boat ?

Watch Video Solution

68. Show that the total number of selection that can be made out of the letters of the phrase "daddy did a deadly deed" is 1919.

Watch Video Solution

69. A committee of 5 is to be formed from 9 women and 8 men. if the committee commands women's majority, then find the number of ways this can be done ?

Watch Video Solution

70. A 5-digit number is divisible by 3 and it is formed by using 0, 1, 2, 3, 4, and 5 without repetition. Find the total number of ways in which such a number can be formed ?

Watch Video Solution

71. Find the number of (i) Combination (ii) Permutation of the letters of the word "IMPRESSION" taking 4 letters at a time.

Watch Video Solution

72. Find the number of ways in which a selection of four letters can be made from the letters of the word "PROPORTION".

Watch Video Solution

73. Find the word in 50th position in the dictionary when the letters of the word "AGAIN" are arranged.

Watch Video Solution

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

Watch Video Solution

75. How many ways the three angular points of a regular decagon can be selected so that no two angular points are consecutive.

Watch Video Solution

76. Find the number of words that can be made by writing down the letters of the word 'CALCULATE' such that each starts and ends with a

consonant.

Watch Video Solution

77. In an election the number of contestants is one more than the number of maximum candidates for which a voter can vote. If the total number of ways in which a voter can vote be 62, find the number of candidates.

Watch Video Solution

78. Find the number of combinations and Permutations of 4 letters taken from the word EXAMINATION .

Watch Video Solution

79. In how many ways a committee of 6 can be formed from a group of 10 doctors of whom 6 are ladies and 4 are gents so that one particular lady

doctor must be included in the committee.

Watch Video Solution

80. Car licenses of a certain place consist of 3 letters followed by 3 digits, followed by a letter. The letters L and O must not be used and the first of the digits must not be zero. If repetitions of letters and digits are allowed, how many different number plates are available.

Watch Video Solution

81. Find the number of ways in which the letters of the word 'STATISTICS' can be arranged so that I do not not come together?

Watch Video Solution

82. There are 2 students for Physics, 3 students for chemistry and 1 student for Mathematics Gold medal. In how many ways one of these

Gold medals be awarded ?

Watch Video Solution

83. There are 3 candidates for a Physics, 5 for a Chemistry and 4 for a Mathematics scholarship.

In how many ways can these scholarships be awarded ?(one scholarship per subject)

Watch Video Solution

84. There are 3 candidates for a Physics, 5 for a Chemistry and 4 for a Mathematics scholarship.

In how many ways one can these scholarships be awarded ?(one scholarship per subject)

Watch Video Solution

85. There are three stations A, B and C . If five routes for going from station A to station B and four routes for going from station B to station C, than find the number of different ways through which a person can go from A to C via B.

Watch Video Solution

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

Watch Video Solution

87. How many different signals can be made by 5 flags from 8 flags of different colours ?

Watch Video Solution

88. How many permutations can be made out of the letters of the word 'TRIANGLE' ? How many of these will begin with T and end with E ?

Watch Video Solution

89. Find the number of permutations that can be had from the letters of the word 'OMEGA'

O and A occupying end places

Watch Video Solution

90. Find the number of permutations that can be had from the letters of the word 'OMEGA'

E being in the middle

Watch Video Solution

91. Find the number of permutations that can be had from the letters of the word 'OMEGA'

Vowels occupy odd places

Watch Video Solution

92. Find the number of permutations that can be had from the letters of the word 'OMEGA'

Vowels being never together

Watch Video Solution

93. In how many ways can 24 persons be seated round a table, if there are 13 seats?

Watch Video Solution

94. 20 persons were invited to a party. In how many ways can they and the host be seated at a circular table ? In how many of these ways will two particular persons be seated on either side of the host .

Watch Video Solution

95. Find the number of ways in which 12 different beads can be arranged to form a necklace.

Watch Video Solution

96. Evaluate :. . $^{47}C_4 + \sum_{j=0}^{3} .^{50-j}C_3 + \sum_{k=0}^{5} .^{56-k}C_{53-k}$

Watch Video Solution

97. How many different selections of 6 books can be made from 11 different book , if

Two particular books are always selected ,

Watch Video Solution

98. How many different selections of 6 books can be made from 11 different book , if

Two particular books are never selected ?

Watch Video Solution

99. 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

100. Find the number of combination that can be formed with 5 oranges, 4 mangoes and 3 bananas when it is essential to take

at least one fruit.

Watch Video Solution

101. Find the number of combination that can be formed with 5 oranges, 4 mangoes and 3 bananas when it is essential to take

one fruit of each kind.

Watch Video Solution

102. Find the number of factors (excluding 1 and the number itself) of the number 38808. Find also the sum of these divisors.

Watch Video Solution

103. 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

104. In how many ways can 12 balls be divided between 2 boys, one receiving 5 and the other 7 balls ?

Watch Video Solution

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

Watch Video Solution

106. Four boys picked up 30 mangoes . In how many ways can they divide them if all mangoes be identical ?

Watch Video Solution

107. How many integral solutions are there to x + y + z + t = 29 , when $x \geq 1, y \geq 1, z \geq 3$ and $t \geq 0$?

Watch Video Solution

108. A person writes letters to six friends and addresses the corresponding envelopes. In how many ways can be letters be placed in the envelopes so that at least two of them are in the wrong envelopes.

Watch Video Solution

109. A person writes letters to six friends and addresses the corresponding envelopes. In how many ways can be letters be placed in the envelopes so that all the letters are in the wrong envelopes.

Watch Video Solution

110. Find the number of combinations and Permutations of 4 letters taken from the word EXAMINATION .

Watch Video Solution

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

Watch Video Solution

112. How many integral solution are these to the system of equations $x_1 + x_2 + x_3 + x_4 + x_5 = 20$ and $x_1 + x_2 = 15$ when $x_k \geq 0$?

Watch Video Solution

113. Find the number of rectangles excluding squares from a rectangle of size 9×6

Watch Video Solution

114. Prove that 33! is divisible by 2^{19} and what is the largest integer n such that 33! is divisible by 2^n ?

Watch Video Solution

115. Find the number of zeros at the end of 100! ?

Watch Video Solution

116. Find the number of arrangements of the letters of the word INDEPENDENCE. In how many of these arrangements.

do the words start with P

Watch Video Solution

117. Find the number of arrangements of the letters of the word INDEPENDENCE. In how many of these arrangements.

do all the vowels always occur together

Watch Video Solution

118. Find the number of arrangements of the letters of the word INDEPENDENCE. In how many of these arrangements.

do the vowels never occur together

Watch Video Solution

119. Find the number of arrangements of the letters of the word INDEPENDENCE. In how many of these arrangements.

do the words begin with I and end in P ?

Watch Video Solution

120. A committee of 3 persons is to be constituted from a group of 2 men and 3 women. In how many ways can this be done ? How many of these committees would consist of 1 man and 2 women ?

Watch Video Solution

121. What is the number of ways of choosing 4 cards from a pack of 52 playing cards ? In how many of these

four cards are of the same suit,

Watch Video Solution

122. What is the number of ways of choosing 4 cards from a pack of 52 playing cards ? In how many of these

four cards belong to four different suits,

Watch Video Solution

123. What is the number of ways of choosing 4 cards from a pack of 52 playing cards ? In how many of these

are face cards,

Watch Video Solution

124. What is the number of ways of choosing 4 cards from a pack of 52 playing cards ? In how many of these

two are red and two are black cards.

Watch Video Solution

125. What is the number of ways of choosing 4 cards from a pack of 52 playing cards ? In how many of these

cards are of the same colour ?

Watch Video Solution

126. A group consists of 4 girls are 7 boys. In how many ways can a team of 5 members be selected if the team has no girl ?

Watch Video Solution

127. A group consists of 4 girls are 7 boys. In how many ways can a team of 5 members be selected if the team has at least one boy and one girl ?

Watch Video Solution

128. A group consists of 4 girls are 7 boys. In how many ways can a team of 5 members be selected if the team has at least 3 girls ?

Watch Video Solution

129. A committee of 7 has to be formed from 9 boys and 4 girls .In how many can this be done when the committee consists of

Exactly 3 girls

Watch Video Solution

130. A committee of 7 has to be formed from 9 boys and 4 girls .In how many can this be done when the committee consists of

at least 3 girls

Watch Video Solution

131. A committee of 7 has to be formed from 9 boys and 4 girls .In how many can this be done when the committee consists of

at most 3 girls

Watch Video Solution

132. From a class of 25 students, 10 are to be chosen for an excursion party, there are 3 students who decide that either all of them will join or none of them will join . In how many ways can the excursion party be chosen ?

Watch Video Solution

133. 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

134. Determine the number of 5-card combination out of a deck of 52 cards if each selection of 5 cards has exactly one king.

Watch Video Solution

135. Number of words of 4 letters that can be formed with the letters of the word IITJEE is

A. 42

B. 82

C. 102

D. 142

Answer: C

Watch Video Solution

136. Sum of all the odd divisors of 720 is

A. 76

B. 78

C. 80

D. 84

Answer: B

Watch Video Solution

137. The maximum number of point interaction of 8 circles, is

A. 16

B. 24

C. 28

D. 56

Answer: D

Watch Video Solution

138. The sides AB, BC and CA of a triangle ABC have 3,4 and 5 interior points respectively on them . the number of triangle that can be constructed using these interior points as vertices , is

A. 205

B. 208

C. 220

D. 380

Answer: A

Watch Video Solution

139. If a, b , c , d are odd natural numbers such that a+ b+c+d=20, then the number of values of the ordered quadruplet (a, b, c, d) is

A. 165

B. 310

C. 295

D. 398

Answer: A

Watch Video Solution

140. 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

A. TOJECB

B. TOEJCB

C. TOCJEB

D. TOJCBE

Answer: D

Watch Video Solution

141. 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

A. 270

B. 220

C. 282

D. 342

Answer: D

Watch Video Solution

142. 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

A. $.^{n}P_{3}$

B. n^{3} - $.^{n}P_{3}$

C. $3n^{2}-2n$

D. $3n^{2}(n-1)$

Answer: C

Watch Video Solution

143. The number of ways in which a couple can sit around a table with 6 guests, if the couple take consecutive seats is

A. 720

B. 1440

C. 2880

D. 5040

Answer: B

Watch Video Solution

144. Out of 20 different pearis, if there are 10 pearls of each colour, then the number of ways in which two colours can be set alternately on a necklace, is

A. $9! \times 10!$

B. $5(9!)^2$

C. $(9!)^2$

D. None of these

Answer: B

Watch Video Solution

145. 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

A. 12

B. 11

C. 10

D. None of these

Answer: B

Watch Video Solution

146. The number of way in which 6 different balls can be put in two boxes of different sizes so that no box remains empty is

A. 62

B. 64

C. 36

D. None of these

Answer: A

Watch Video Solution

147. The number of arrangements of the letters of the word BHARAT taking 3 at a time is

A. 72

B. 120

C. 14

D. None of these

Answer: A

Watch Video Solution

148. 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

A. $2! \times 2!$

B. 4!

C. 2(4!)

D. 8

Answer: D

Watch Video Solution

149. If x, y, z are integers such that $x \geq 0, y \geq 1, z \geq 2$ and x + y + z = 15, then the number of ordered triplets of the from (x,y,z) is

A. 91

B. 455

C. $.^{17} C_{15}$

D. 544

Answer: A

Watch Video Solution

150. If a , b , c are positive integers such that a + b + c $\leq$ 8, then the number of ordered triplets of the form (a,b,c) is

A. 84

B. 56

C. 83

D. 45

Answer: B

Watch Video Solution

151. The number of ways to distribute 20 apples to 3 different boys, each boy receiving at least 4 apples , is

A. $\hat{}\ 10C_8$

B. 90

C. $\hat{}\ 22C_{20}$

D. None of these

Answer: D

Watch Video Solution

152. There are n seats round a table numbered 1,2,3,....,n. The number of ways in which $m(\leq n)$ persons can take seats in

A. ^ nP_m

B. ^ $nC_m \times (m-n)!$

C. ^ $(n-1)P_{m-1}$

D. ^ $(n+1)P_{m+1}$

Answer: A

Watch Video Solution

153. A bets man can score 0,1,2,3,4 or 6 runs from a ball. The number of different sequences in which he can score exactly 30 runs in an over of six balls is

A. 4

B. 72

C. 58

D. 71

Answer: A

Watch Video Solution

154. How many signals can be made by 5 flags from , 8 flags of different colours ?

A. ^ $8C_5$

B. ^ $8C_5 \times 5!$

C. 5^8

D. 8^5

Answer: B

Watch Video Solution

155. Every one of the 10 available lamps can be switched on to illuminate certain Hall. The total number of ways in which the hall can be illuminated , is

A. 55

B. 1023

C. 2^{10}

D. 10!

Answer: B

Watch Video Solution

156. 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

A. $.^{n}C_{4} - .^{m}C_{3}.^{n-m+1}C_{1} - .^{m}C_{4}$

B. $.^{n}C_4 - .^{m}C_3.^{n-m}C_1 + .^{m}C_4$

C. $.^{n}C_4 - .^{m}C_3.^{n-m}C_1 - .^{m}C_4$

D. $.^{n}C_4 + .^{n}C_3.^{m}C_1$

Answer: C

Watch Video Solution

157. There are 3 sections in a question paper each containing 5 questions. A candidate has to solve only 5 questions, choosing at least one question from each section. In how many ways can he make his choice ?

A. $.^{15}C_5$

B. $.^{3}C_1 \times .^{12}C_4$

C. 2250

D. 2253

Answer: C

Watch Video Solution

158. Let A and B be two sets consisting of m and n elements respectively $(n \geq m)$. The number of one - one functions from A to B is

A. n^m

B. $\hat{} \ nC_m$

C. $.^n C_m \times m!$

D. m^n

Answer: C

Watch Video Solution

159. 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

A. 69760

B. 30240

C. 99748

D. None of these

Answer: A

Watch Video Solution

160. The value of the expression $.^{47}C_4 + \sum_{j=1}^{5} .^{52-j}C_3$ is equal to

A. $.^{47}C_3$

B. $.^{52}C_5$

C. $.^{52}C_4$

D. None of these

Answer: C

Watch Video Solution

Watch Video Solution

161. In a plane there are 37 straight lines, of which 13 pass through the point A and 11 pass through the point B. Besides, no three lines pass through one point , on line passes through both points A and B , and no two are parallel. Them the number of interaction points the lines have is equal to

A. 535

B. 601

C. 728

D. None of these

Answer: A

Watch Video Solution

162. A set contains (2n + 1) elements. The number of subsets of the which contain at most n elements is

A. 2^n

B. 2^{n+1}

C. 2^{n-1}

D. 2^{2n}

Answer: D

Watch Video Solution

163. The number of even divisors of 10800 is

A. 12

B. 24

C. 36

D. 48

Answer: D

Watch Video Solution

164. Ten persons are arranged in a row . The number of ways of selecting four persons so that no two persons sitting next to each other's are selected is

A. 34

B. 36

C. 35

D. None of these

Answer: C

Watch Video Solution

165. The number of solutions of $x_1 + x_2 + x_3$ = 51 (x_1, x_2, x_3 being odd natural numbers)

A. 300

B. 325

C. 330

D. 350

Answer: B

Watch Video Solution

166. The number of times of the digits 3 will be written when listing the integers from 1 to 1000 is

A. 269

B. 300

C. 271

D. 302

Answer: B

Watch Video Solution

167. Total number of integral solution of the system of equations $x_1 + x_2 + x_3 + x_4 + x_5 = 20$ and $x_1 + x_2 = 15$ when $x_k \geq 0$, is

A. 335

B. 336

C. 338

D. 340

Answer: B

Watch Video Solution

168. The number of ways of arranging six person (having A, B, C and D among them) in a row so that A, B, C and D are always in order ABCD (not necessarily together) is

A. 4

B. 10

C. 30

D. 720

Answer: C

Watch Video Solution

169. The total number of 5 digit numbers of different digits in which the digit in the middle in the largest is

A. 130 xx 3!`

B. $33 \times 3!$

C. $\sum_{n=4}^{9} n^C \_ 4 \times 4!$

D. None of these

Answer: D

Watch Video Solution

170. 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

A. $7P_2 \cdot 2^5$

B. $\hat{} \; 7C_2 \cdot 2^5$

C. $\hat{} \; 7C_2 \cdot 5^2$

D. None of these

Answer: B

Watch Video Solution

171. Let A be the set of 4- digit numbers $a_1a_2a_3a_4$ where $a_1 > a_2 > a_3 > a_4$ then n(A) is equal to

A. 126

B. 84

C. 210

D. None of these

Answer: C

Watch Video Solution

172. The number of four digits numbers divisible by 3 that can be formed by four different even digits is

A. 18

B. 36

C. 24

D. 48

Answer: B

Watch Video Solution

173. Between two junction stations A and B there are 12 intermediate stations. The number of ways in which a train can be made to stop at 4 of these stations so that no two of these halting station are consecutive , is

A. $\hat{}\ 8C_4$

B. $\hat{}\ 9C_4$

C. $\hat{}\ 12C_4 - 4$

D. none of these

Answer: B

Watch Video Solution

174. A car will hold 2 persons in the front seat and i in the rear seat . If among 6 persons only 2 can drive , the number of ways , in which the car can be filled , is

A. 10

B. 18

C. 20

D. 40

Answer: D

Watch Video Solution

175. The number of rectangles excluding squares from a rectangle of size 15×10 is

A. 3940

B. 4940

C. 5940

D. 6940

Answer: C

Watch Video Solution

176. The number of divisors of $2^2 \cdot 3^3 \cdot 5^5 \cdot 7^5$ of the form 4n + 1, $n \in N$ is

A. 48

B. 47

C. 96

D. 94

Answer: B

Watch Video Solution

177. The maximum number of different permutations of 4 letters of the word EARTHQUAKE is

A. 1045

B. 2190

C. 4380

D. 2348

Answer: B

Watch Video Solution

178. We are required to from different words with the help of the letter of the word INTEGER. Let m_1 be the number of words in which I and N are never together and m_2 be the number of words which beginning with I and end with R, then $\frac{m_1}{m_2}$ is given by

A. 42

B. 30

C. 6

D. 44226

Answer: B

Watch Video Solution

179. 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}

A. 5

B. 10

C. 15

D. None of these

Answer: B

Watch Video Solution

180. A closet has 5 pairs of shoes. The number of ways in which 4 shoes can be chosen from it so that there will be no complete pair is

A. 80

B. 160

C. 200

D. None of these

Answer: A

Watch Video Solution

181. The number of positive integers satisfying the inequality $.^{n+1}C_{n-2} - .^{n+1}C_{n-1} \leq 100$ is

A. nine

B. eight

C. five

D. None of these

Answer: B

Watch Video Solution

182. A father with 8 children takes 3 at a time to the zoological gardens, as often as he can without taking the same 3 children together more than once . the number of times he will go to the garden is

A. 336

B. 112

C. 56

D. None of these

Answer: C

Watch Video Solution

183. For $2 \leq r \leq n$, $\left(\frac{n}{r}\right) + 2\left(\frac{n}{r-1}\right) + \left(\frac{n}{r-2}\right)$ is equal to

A. $\left(\frac{n+1}{r-1}\right)$

B. $2\left(\frac{n+1}{r-1}\right)$

C. $2\left(\frac{n+1}{r}\right)$

D. $\left(\frac{n+2}{r}\right)$

Answer: D

Watch Video Solution

184. A letter lock consists of three rings marked with 15 different letters . If N denotes the number of ways in which it is possible to make unsuccessful attempts to open the lock, then

A. 482 | N

B. N is product of three distinct prime numbers

C. N is product of four distinct prime numbers

D. N is product of two distinct prime numbers

Answer: A::B

Watch Video Solution

185. The number of subsets of a set containing n distinct elements is

A. $.^{n}P_0 + .^{n}P_1 + \ldots\ldots + .^{n}P_n$

B. $.^{n}C_0 + .^{n}C_1 + \ldots\ldots + .^{n}C_n$

C. 2^n

D. None of these

Answer: B::C

Watch Video Solution

186. If $\alpha = x_1x_2x_3$ and $\beta = y_1y_2y_3$ be two three digits numbers , the numbers , the number of pairs of α and β can be formed so that α can be subtracted from β without borrowing is

A. $2!10!10!$

B. $(45)(55)^2$

C. $3^2 \cdot 5^3 \cdot 11^2$

D. 136125

Answer: B::C::D

Watch Video Solution

187. The number of diagonals an n - sided convex polygon is

A. ^ nC_2

B. ^ nC_2 - n

C. $\frac{n(n-3)}{2}$

D. None of these

Answer: B::C

Watch Video Solution

188. $24!$ is divisible by

A. 2^{22}

B. 24^7

C. 3^{10}

D. 12^{10}

Answer: A::B::C::D

Watch Video Solution

189. If N is the number of positive integral solutions of $x_1 \cdot x_2 \cdot x_3 \cdot x_4 = 770$, then

A. N is divisible by 4 distinct primes

B. N is perfect square

C. N is perfect 4th power

D. N is a perfect 8th power

Answer: B::C::D

Watch Video Solution

190. The total number of ways in which a beggar can be given at least one rupee from four 25- paise coins, three 50-paisa coins and 2 one-rupee coins, is

A. 54

B. 53

C. 51

D. None of these

Answer: A

Watch Video Solution

191. The number of ways in which three numbers in A.P. can be selected from 1,2,3,.....,n is

A. $\frac{n(n-2)}{4}$, when n is even

B. $\frac{1}{4}(n-1)^2$, when n is odd

C. $\frac{n(n-2)}{2}$, when n is even

D. None of these

Answer: A::B

Watch Video Solution

192. If $n < p < 2n$ and p is prime and N = $.^{2n}C_n$, then

A. p dividesN

B. p does not divide N

C. p^2 dividesN

D. p^2 does not divide N

Answer: A::D

Watch Video Solution

193. Let $\vec{a} = \vec{i} + \vec{j} + \vec{k}$ and let $\vec{r}$ be a variable vector such that $\vec{r} \cdot \vec{i}$, $\vec{r} \cdot \vec{j}$ and $\vec{r} \cdot \vec{k}$ are positive integers. If $\vec{r} \cdot \vec{a} \leq 12$ then the number of values of $\vec{r}$ is

A. . $^{12}C_9$ - 1

B. . $^{12}C_3$

C. . $^{12}C_9$

D. None of these

Answer: B::C

Watch Video Solution

194. $2^m 3^n 5^p$ is a divisor of $2^{10} \cdot 3^8 \cdot 5^7$ if m, n and p are all whole number such that $0 \leq m \leq 10, 0 \leq n \leq 8$ and $0 \leq p \leq 7$. also,

$\left(2^0 + 2^1 + \ldots\ldots\ldots + 2^{10}\right)\left(3^0 + 3^1 + \ldots\ldots + 3^8\right)\left(5^0 + 5^1 + \ldots. + 5^7\right)$ =

sum of all the divisors of $2^{10} \cdot 3^8 \cdot 5^7$

The number of proper divisors of 16200 is

A. 60

B. 24

C. 58

D. 22

Answer: C

Watch Video Solution

195. $2^m 3^n 5^p$ is a divisor of $2^{10} \cdot 3^8 \cdot 5^7$ if m, n and p are all whole number such that $0 \leq m \leq 10, 0 \leq n \leq 8$ and $0 \leq p \leq 7$. also,

$\left(2^0 + 2^1 + \ldots\ldots\ldots + 2^{10}\right)\left(3^0 + 3^1 + \ldots\ldots + 3^8\right)\left(5^0 + 5^1 + \ldots. + 5^7\right)$ =

sum of all the divisors of $2^{10} \cdot 3^8 \cdot 5^7$

The number of proper divisors of 16200 is

A. 1170

B. 810

C. 1169

D. 809

Answer: D

Watch Video Solution

196. $2^m 3^n 5^p$ is a divisor of $2^{10} \cdot 3^8 \cdot 5^7$ if m, n and p are all whole number such that $0 \leq m \leq 10, 0 \leq n \leq 8$ and $0 \leq p \leq 7$. also,

$\left(2^0 + 2^1 + \ldots\ldots\ldots + 2^{10}\right)\left(3^0 + 3^1 + \ldots\ldots + 3^8\right)\left(5^0 + 5^1 + \ldots. + 5^7\right)$ = sum of all the divisors of $2^{10} \cdot 3^8 \cdot 5^7$

The sum of odd divisors $(\neq 1)$ of 10800 is

A. 1239

B. 1240

C. 1238

D. 2479

Answer: A

Watch Video Solution

197. Different words are being formed by arranging the letters of the words 'ARRANGE'. All the words obtained are written in the form of a dictionary.

The number of words in which the two 'R' are not together

A. 1260

B. 660

C. 900

D. 240

Answer: C

Watch Video Solution

198. Different words are being formed by arranging the letters of the words 'AARANGE'. All the words obtained are written in the form of a dictionary.

The number of words in which neither two 'R' nor two 'A' come together is

A. 1260

B. 660

C. 900

D. 240

Answer: B

Watch Video Solution

199. Different words are being formed by arranging the letters of the words 'ARRANGE'. All the words obtained are written in the form of a dictionary.

The number of words in which the consonants appear in alphabetic order is

A. 100

B. 105

C. 360

D. 240

Answer: B

Watch Video Solution

200. Match List - I with List - II

8. Match List - I with List - II

List - I	List - II
(P) The number of polynomials f(x) with non-negative integer coefficients of degree ≤ 2, satisfying $f(0) = 0$ and $\int_0^1 f(x)dx = 1$, is	(i) 8
(Q) $\int_{-2}^{2} \frac{3x^2}{(1+e^x)} dx$ equals	(ii) 2
(R) $\frac{\left(\int_{-1/2}^{1/2} \cos 2x \log\left(\frac{1+x}{1-x}\right)dx\right)}{\left(\int_{0}^{1/2} \cos 2x \log\left(\frac{1+x}{1-x}\right)dx\right)}$ equals	(iii) 0

Watch Video Solution

201. Match List - I with List - II

8. Match List - I with List - II

List - I		List - II	
(P)	The number of polynomials f(x) with non-negative integer coefficients of degree ≤ 2, satisfying $f(0) = 0$ and $\int_0^1 f(x)dx = 1$, is	(i)	8
(Q)	$\int_{-2}^{2} \frac{3x^2}{(1+e^x)} dx$ equals	(ii)	2
(R)	$\frac{\left(\int_{-\frac{1}{2}}^{\frac{1}{2}} \cos 2x \log\left(\frac{1+x}{1-x}\right)dx\right)}{\left(\int_{0}^{\frac{1}{2}} \cos 2x \log\left(\frac{1+x}{1-x}\right)dx\right)}$ equals	(iii)	0

Watch Video Solution

202. 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

203. the remainder obtained $1! + 2! + ... + 1200!$ is divided by 14 is

Watch Video Solution

204. A bouquet from 11 different flowers is to be made so that it contains not less than three flowers. The number of different ways of forming the bouquet is a , then a/283 is.....

Watch Video Solution

205. 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

206. A five digit number divisible by 3 is to be formed using the numerals 0, 1, 2, 3, 4, & 5 without repetition . if the total number of ways in which this can be done is n^3, then $\frac{n!}{144}$ must be...

Watch Video Solution

207. Find the number of number between 300 and 3000 that can be formed with the digits 0,1,2,3,4 and 5, no digit being repeated in any number.

Watch Video Solution

208. A number of four different digits is formed with the help of the digits 1, 2, 3, 4, 5, 6, 7 in all possible ways. Find

how many such numbers can be formed ?

Watch Video Solution

209. A number of four different digits is formed with the help of the digits 1, 2, 3, 4, 5, 6, 7 in all possible ways. Find

How many of these are even ?

Watch Video Solution

210. A number of four different digits is formed with the help of the digits 1, 2, 3, 4, 5, 6, 7 in all possible ways. Find

How many of these are exactly divisible by 4 ?

Watch Video Solution

211. A number of four different digits is formed with the help of the digits 1, 2, 3, 4, 5, 6, 7 in all possible ways. Find

How many of these are exactly divisible by 25 ?

Watch Video Solution

212. A train is going from kolkata to Delhi stops at nine intermediate stations. Six persons enter the train during the journey with six different tickets. How many different sets of tickets they have had ?

Watch Video Solution

213. If $\hat{}\ {}^{n}P_{r} = \hat{}\ {}^{n}P_{r+1}$ and $\hat{}\ {}^{n}C_{r} = \hat{}\ {}^{n}C_{r-1}$ find the value of n and r.

Watch Video Solution

214. Solve the inequality

$$.^{n-1}C_4 - .^{n-1}C_3 - \frac{5}{4}.^{n-2}C_2 < 0, n \in N$$

Watch Video Solution

215. The letters of the word OUGHT are written in all possible order and these words are written out as in a dictionary. Find the rank of the word TOUGH in this dictionary.

Watch Video Solution

216. How many numbers of 5 digits can be made with the digits 0,1,2,3,4,5 which are divisible by 3, digits being unrepeated in the same number ? How many of these will be divisible by 6 ?

Watch Video Solution

217. 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

218. n different things are arranged around a circle. In how many ways can 3 object be selected when no two of the selected objects are consecutive.

Watch Video Solution

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

Watch Video Solution

220. Let T_n denotes 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 equals

A. 5

B. 7

C. 6

D. 4

Answer: B

Watch Video Solution

221. If $.^{n}c_{r-1} = 10, .^{n}c_{r} = 45$ and $.^{n}c_{r+1} = 120$ then r equals

A. 1

B. 2

C. 3

D. 4

Answer: B

Watch Video Solution

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

A. $\sum_{n=4}^{9} .^{n}p_4$

B. $(33)!3$

C. $(30)!3$

D. none of these

Answer: D

Watch Video Solution

223. The number of ways in which 7 persons can be seated at a round table if twom particular persons are not to sit together is

A. 120

B. 480

C. 600

D. 720

Answer: B

Watch Video Solution

224. Number of divisors of the form $4n + 2(n \geq 0)$ of the integer 240 is

A. 4

B. 8

C. 10

D. 3

Answer: A

Watch Video Solution

225. Total number of words formed by using 2 vowels and 3 consonants taken from 4 vowels and 5 consonants is equal to

A. 60

B. 120

C. 720

D. none of these

Answer: D

Watch Video Solution

226. If 5 parallel straight lines are intersected by 4 parallel straight lines then the number of parallelograms thus formed is

A. 11

B. 60

C. 101

D. 126

Answer: B

Watch Video Solution

227. Everybody in a room shakes hand with everybody else the total number of handshakes is 66 the total number of persons in the room is

A. 11

B. 12

C. 13

D. 14

Answer: B

Watch Video Solution

228. Given that n is the odd the number of ways in which three numbers in A.P. can be selected from {1,2,3,4....,n} is

A. $\frac{(n-1)^2}{2}$

B. $\frac{(n+1)^2}{4}$

C. $\frac{(n+1)^2}{2}$

D. $\frac{(n-1)^2}{4}$

Answer: D

Watch Video Solution

229. The total number of numbers that can be formed by using all the digits 1,2,3,4,3,2,1 so that the odd digits always occupy the odd place is

A. 3

B. 6

C. 9

D. 18

Answer: D

Watch Video Solution

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

A. 40

B. 60

C. 80

D. 100

Answer: A

Watch Video Solution

231. The maximum number of points of intersection of 8 straight lines is

A. 8

B. 16

C. 28

D. 56

Answer: C

Watch Video Solution

232. 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

A. 360

B. 192

C. 96

D. 48

Answer: C

Watch Video Solution

233. Two straight lines intersected at a point O.points $A_1, A_2 \ldots A_n$ are taken on one lines and points $B_1, B_2 \ldots B_n$ on the other if the point O is not to be used the number of triangles that can be drawn using these points as vertices is

A. n(n-1)

B. $n(n-1)^2$

C. $n^2(n-1)$

D. $n^2(n-1)^2$

Answer: C

Watch Video Solution

234. A five digit number divisible by 3 has to formed using the numerals 0,1,2,3,4,5 without repetition the total number of ways in which this can

A. 216

B. 240

C. 600

D. 3125

Answer: A

Watch Video Solution

235. 4 points out of 8 points in a plane are collinear number of different quadrilateral that can be formed by joining them is

A. 56

B. 53

C. 76

D. 60

Answer: B

Watch Video Solution

236. A rectangle with sides 2m-1 and 2n-1 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. none of these

Answer: A

Watch Video Solution

237. If $a, b, c \in N$ the number of points having position vector $a\hat{i} + b\hat{j} + c\hat{k}$ such that $6 \leq a + b + c \leq 10$

A. 110

B. 116

C. 120

D. 127

Answer: A

Watch Video Solution

238. A function is defined as $f: \{a_1, a_2, a_3, a_4, a_5, a_6\} \to \{b_1, b_2, b_3\}$ then number of functions in which $f(a_i) \neq b_i$ is divisible by

A. 11

B. 13

C. 5

D. 7

Answer: C

Watch Video Solution

239. Let $A = (x_1, x_2, x_3, x_4, x_5, x_6\}B = \{y_1, y_2, y_3, y_4, y_5, y_6\}$ then the number of one one mappings from A to B such that $f(x_!) \neq y_i, i = 1, 2, 3, 4, 5, 6$ is

A. 720

B. 265

C. 360

D. 145

Answer: B

Watch Video Solution

240. A function is defined as $f: \{a_1, a_2, a_3, a_4, a_5, a_6\} \to \{b_1, b_2, b_3\}$ then number of functions in which $f(a_i) \neq b_i$ is divisible by

A. 5

B. 7

C. 11

D. 4

Answer: D

Watch Video Solution

241. A person goes two for an examination in which there are four papers with a maximum of m marks from each paper.the number of ways in which one can get 2m marks is

A. $2m +^3 c_3$

B. $\frac{1}{3}(m+1)\left(2m^2+4m+1\right)$

C. $\frac{1}{3}(m+1)\left(2m^2+4m+3\right)$

D. none of these

Answer: C

Watch Video Solution

242. At an election a voter may vote for any number of candidates not greater than the number of candidates to be chosen there are 10

candidates and 5 members are to chosen the number of ways in which a voter may vote at a least one candidate is given by

A. 637

B. 638

C. 639

D. 640

Answer: A

Watch Video Solution

243. 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

A. 27

B. 24

C. 9

D. none of these

Answer: C

Watch Video Solution

244. There are 12 balls numbered from 1 to 12 the number of ways in which they can be used to fill 8 places in a row so that the balls are with numbers in ascending or descending order is equal to

A. $.^{12}c_8$

B. $.^{12}p_8$

C. $2\times^{12}p_8$

D. $2\times^{12}c_8$

Answer: D

Watch Video Solution

245. If a,b,c are odd positive integers then number of integral solutions of a+b+c=13 is

A. 14

B. 21

C. 28

D. 56

Answer: B

Watch Video Solution

246. 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

A. $2! \times 2!$

B. $4!$

C. $2(4!)$

D. 8

Answer: D

Watch Video Solution

247. A student is to answer 10 out of 13 questions in an examination such that he must choose at least 4 from the first five questions the number of choices available to him is

A. 140

B. 196

C. 280

D. 346

Answer: B

Watch Video Solution

248. A class has n students we have to form a team of the students including at least two students and also excluding atleast two students the number of ways of forming the team is

A. $2^n - 2n$

B. $2^n - 2n - 2$

C. $2^n - 2n - 4$

D. $2^n - 2n - 6$

Answer: B

Watch Video Solution

249. If all permutation of the letters of the word AGAIN are arranged as in a dictionary then 49th word is

A. NAAGI

B. NAGAI

C. NAAIG

D. none of these

Answer: A

Watch Video Solution

250. If a,b,c,d are odd natural numbers such that a+b+c+d=20 then the number of values of ordered quadruplet (a,b,c,d) is

A. 165

B. 310

C. 295

D. 398

Answer: A

Watch Video Solution

251. The value of. $^{50}c_4 + \sum_{r=1}^{6} .^{56-r}c_3$ is

A. $.^{56}c_3$

B. $.^{56}c_4$

C. $.^{55}c_4$

D. $.^{55}c_3$

Answer: B

Watch Video Solution

252. On the occasion of deepawali festival each student of a class sends greetings cards to one another if the postman deliver 1640 greeting cards to the students of this class then the number of students in the class is

A. 39

B. 40

C. 42

D. 41

Answer: D

Watch Video Solution

253. The set S:={1,2,3.....12} is to be partitioned into three sets A,B,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

A. $\frac{12!}{3!(4!)^3}$

B. $\frac{12!}{3!(3!)^4}$

C. $\frac{12!}{(4!)^3}$

D. $\frac{12!}{(3!)^4}$

Answer: C

Watch Video Solution

254. 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

A. atleast1000

B. less than 500

C. at least500 but less than 750

D. at least 750 but less than 1000

Answer: A

Watch Video Solution

255. A servant has to post 5 letters and there are 4 letter boxes in how many ways can he post the letter is

A. $.^5 p_4$

B. $\frac{5!}{4!}$

C. 5^4

D. 4^5

Answer: D

Watch Video Solution

256. In how many ways 5 delegates can be put in 6 hotels of a city if there is no restriction is

A. 6^5

B. 5^6

C. $.^6 p_5$

D. $\frac{6!}{5!}$

Answer: A

Watch Video Solution

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

A. $\frac{11!}{2!2!2!}$

B. $11!$

C. $\frac{11!}{2!}$

D. $\frac{11!2!7!4!}{2!2!2!2!2!2!}$

Answer: A

Watch Video Solution

258. If $.^{n-1}c_3 + ^{n-1}c_4 > ^{n}c_3$ then n is greater than

A. 6

B. 7

C. 5

D. 4

Answer: B

Watch Video Solution

259. 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

A. 66

B. 132

C. 198

D. none of these

Answer: B

Watch Video Solution

260. The number of permutations of the letters of the word ENDEANOEL taken all together in which none of the letters D,L,N occurs in the last five positions is

A. 5!`

B. $2 \times 5!$

C. $7 \times 5!$

D. $21 \times 5!$

Answer: B

Watch Video Solution

261. There are 4 letters and 4 directed envelopes the number of ways in which all the letters could be put into the wrong envelopes is

A. 8

B. 9

C. 16

D. none of these

Answer: B

Watch Video Solution

262. Let E={1,2,3,4},F={1,2} then the number of onto functions from E to F is

A. 14

B. 16

C. 12

D. 8

Answer: A

Watch Video Solution

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

A. $(41)\left(9^3\right)$

B. $(37)\left(9^3\right)$

C. $(7)\left(9^4\right)$

D. $(41)\left(9^4\right)$

Answer: A

Watch Video Solution

264. Number of 4 digit numbers which are divisible by 4 that can be formed from the digits 1,2,3,4 and 5 is

A. 90

B. 125

C. 45

D. 225

Answer: D

Watch Video Solution

265. The number of ways of painting the faces of a cube with six different colours is

A. 1

B. 30

C. $6!$

D. $\hat{} \ 6c_6$

Answer: A::D

Watch Video Solution

266. Find the number of words which can be made from letters of the word INTERMEDIATE if all the vowels occur together.

Watch Video Solution

267. Sanjay has 10 friends among whom two are married to each other she wishes to invite 5 of the them for a party if the married couple refuse to attend separately then the number of different ways in which 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

Answer: B::C

Watch Video Solution

268. There are n seats round a table marked 1,2,3,.....n the number of ways in which $m(\leq n)$ persons can take seats is

A. $.^{n}p_m$

B. $.^{n}c_m \times (m-1)!$

C. $.^{n}c_m \times m!$

D. $.^{n-1}p_{m-1}$

Answer: A::C

Watch Video Solution

269. The number of ways in which 10 candidates $A_1, A_2, \ldots . A_{10}$ can be ranked so that A_1 is always above A_2 is

A. $\frac{10!}{2}$

B. $8! \times^{10} p_2$

C. $.^{10} P_2$

D. $.^{10} c_2$

Answer: A::B

Watch Video Solution

270. If a seven digit number made up of all distinct digits 8,7,6,4,2,x and y is divisible by 3 then

A. maximum value of x-y is 9

B. maximum value of x+yis 12

C. minimum value of xy is0

D. minimum value of x+yis3

Answer: A::B::C::D

Watch Video Solution

271. The number of ways of choosing four letters from the letters of the word MATHEMATICS containing exactly one pair of repeated letters is

A. $.^3 c_2 \times .^7 c_2$

B. $2^6 - 1$

C. $\frac{.^3 c_2 (4!)}{2!2!}$

D. $\frac{8!}{(4!)^2}$

Answer: A::B

Watch Video Solution

272. 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

A. $10\frac{!}{6}$

B. 21870

C. $10\frac{!}{3}!$

D. $\hat{} \ 10p_7$

Answer: A::D

Watch Video Solution

273. $(10!) = (2)^p.(3)^q.(5)^r.(7)^8$ then

A. 2q=p

B. pqrs=64

C. number of divisors of $10!$ is 280

D. number of ways of putting $10!$ as a product of two natural numbers is 135

Answer: B::C::D

Watch Video Solution

274. if n objects are arranged 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. $\frac{(n-2)(n-3)(n-4)}{6}$

B. $.^{n-2}c_3$

C. $.^{n-3}c_3 + ^{n-3}c_2$

D. none of these

Answer: A::B::C

Watch Video Solution

275. Different words are being formed by arranging the letters of the word "SUCCESS" all the words obtained by written in the form of a dictionary

The number of words in which the two C's are together but no two S's are together is

A. 120

B. 96

C. 24

D. 420

Answer: C

Watch Video Solution

276. Different words are being formed by arranging the letters of the word "SUCCESS" all the words obtained by written in the form of a dictionary

The number of words in which no two C's and no two S's are together is

A. 120

B. 96

C. 24

D. 420

Answer: B

Watch Video Solution

277. Let p be a prime number and n be a positive integer then exponent of p in $n!$ is denoted by $E_p(n!)$ and is given by $E_p(n!) = \left[\frac{n}{p}\right] + \left[\frac{n}{(p)^2}\right] + \left[\frac{n}{(p)^3}\right] + ... \left[\frac{n}{p^k}\right]$ where $p^k < n < p^{k+1}$ and [x] denotes the greatest integral part of x if we isolate the power of

each prime contained in any number N then N can be written as $N = 2^{\alpha_1}.3^{\alpha_2}.5^{\alpha_3}.7^{\alpha_4}$....where α_i are whole numbers

the exponent of 7 in ,^{100} c_{50} is

A. 0

B. 1

C. 2

D. 3

Answer: A

Watch Video Solution

278. Let p be a prime number and n be a positive integer then exponent of p in $n!$ is denoted by ˆ $E_p(n!)$ and $isgivenby$E_p(n!)=[n/p]+[n/(p)^2]+[n/(p)^3]+....[n/(p^k)]$where$p^kltnltp^(k+1)

and $[x]de\neg esthegreatest\int egralpartofx$ if $weisolatethepowerofeach'$ N=2^(alpha_1).3^(alpha_2).5^(alpha_3).7^(alpha_4)…. $where$alpha_i $arewho \leq \nu mbersThe\nu mberofzerosattheendof$108!ˋis

A. 10

B. 13

C. 25

D. 26

Answer: C

Watch Video Solution

279. No.of ways to distribute n balls into r boxes is

Watch Video Solution

280. Match List - I with List - II

8. Match List - I with List - II

List - I		List - II	
(P)	The number of polynomials f(x) with non-negative integer coefficients of degree ≤ 2, satisfying $f(0) = 0$ and $\int_0^1 f(x)dx = 1$, is	(i)	8
(Q)	$\int_{-2}^{2} \frac{3x^2}{(1+e^x)} dx$ equals	(ii)	2
(R)	$\frac{\left(\int_{-1/2}^{1/2} \cos 2x \log\left(\frac{1+x}{1-x}\right)dx\right)}{\left(\int_{0}^{1/2} \cos 2x \log\left(\frac{1+x}{1-x}\right)dx\right)}$ equals	(iii)	0

Watch Video Solution

281. The least value of n for which $\hat{} (n-1)c_3 +^{n-1} c_4 >^n c_3$ is

Watch Video Solution

282. The letters of the word 'SALOON' are arranged in all possible ways the words (with or without meaning) so formed are arranged as in a dictionary if the rank of the word 'SALOON' in this arrangement is n,then the value of n/101 is...

Watch Video Solution

283. number of words that can be formed with the letters of the word ALGEBRA so that all the vowels do not come together is λ then the value of $\frac{\lambda}{432}$ must be....

Watch Video Solution

284. The sum of the digits in the tenth place of all numbers formed with the help of 4,5,6,7 taken all at a time is λ then $\frac{\lambda}{33}$ must be...

Watch Video Solution

285. The letters of the word PATNA are arranged in all possible ways as in a dictionary then rank of the word PATNA from last is α then $\frac{\alpha}{19}$ is...

Watch Video Solution

286. The number of words can be formed with the letters of the word PATALIPUTRA without changing the relative positions of vowels and consonants is λ then $\frac{\lambda}{1800}$ must be...

Watch Video Solution

287. The number of integral solutions of a+b+c=0 , $a \geq (-5), b \geq (-5), c \geq (-5)$ is λ then $\frac{\lambda}{34}$ must be...

Watch Video Solution

288. if the letters of the word SCHOOL are arranged as in a dictionary then the rank of the word SCHOOL is p the value of p/101 is....

Watch Video Solution

289. If the number of all numbers less than 2000000 which can be written using the digits 1 and 2 is equal to

Watch Video Solution

290. if the sum of the digits occuring in units place of all the 5 digits numbers that can be formed by using all the digits 1,2,3,4,5 is n then n/360 is equal to

Watch Video Solution

291. How many different words can be formed with the letters of the word ORDINATE so that

two vowels occupy odd places

Watch Video Solution

292. How many different words can be formed with the letters of the word ORDINATE so that

beginning with O

Watch Video Solution

293. How many different words can be formed with the letters of the word ORDINATE so that

beginning with O and ending with E?

Watch Video Solution

294. Find the number of ways in which 5 boys and 5 girls be seated in a row so that

no two girls sit together

Watch Video Solution

295. Find the number of ways in which 5 boys and 5 girls be seated in a row so that

all the girls sit together and all the boys sit together

Watch Video Solution

296. Find the number of ways in which 5 boys and 5 girls be seated in a row so that

all the girls are never together

Watch Video Solution

297. out of 18 points in a plane no three are in the same straight lines except five points which are collinear how many

straight lines can be formed by joining them?

Watch Video Solution

298. out of 18 points in a plane no three are in the same straight lines except five points which are collinear how many triangles can be formed by joining them?

Watch Video Solution

299. Find the sum of all numbers greater than 10,000 by using the digits 0,2,4,6,8 no degit being repeated in any number.

Watch Video Solution

300. 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

301. A man appears in an examination in which there are four papers with a maximum of m marks for each paper.show that the number of ways of getting 2m marks on the whole is $\left(\frac{1}{3}\right)(m+2)\left(2m^2+4m+3\right)$

Watch Video Solution

302. 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

303. How many numbers less than 20,000 can be made from 1,2,3,4,5,6,7,0?

Watch Video Solution

304. if $\sum_{k=1}^{n}\left(k^2+1\right)k! = 1999 \times 2000!$ then prove that n=1999

Watch Video Solution