MATHS

JEE (MAIN AND ADVANCED) MATHEMATICS

PERMUTATIONS & COMBINATIONS

SOLVED EXAMPLES

1. If ${}^{n}P_{3} = 1320$, find n.

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2. If ${}^{n+1}P_{5} : {}^{n}P_{6} = 2 : 7$, find n.

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3. If ${}^{18}P_{(r-1)} : {}^{17}P_{(r-1)} = 9:7$, find r.

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4. If there are 30 Railway stations on a Railway line, how many number of single second class tickets must be printed so as to enable a passenger to travel from one station to another.

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5. Find the number of 5 letter words that can be formed using the letters of the word CONSIDER. How many of them begin with "C", how many of them end with 'R' and how many of them begin with "C" and end with "R" ?

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6. How many 4 letter words can be formed using the letters of the word 'ARTICLE'. Find the number of words if i) that begin with an vowel ii) containing A

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7. The number of ways in which 5 boys and 5 girls can be sit in a row so that all the girls sit together is

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8. Find the number of ways to arrange 5 boys and 5 girls in a row such that

no two girls sit together

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9. The number of ways in which 5 boys and 5 girls can be sit in a row so that all the girls sit together is

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10. 5 boys and 5 girls sit around a round table at random. The probability that the boys and girls may sit alternatively is

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11. In how many ways 6 boys and 5 girls can be arranged along a row so that

all the girls come together

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12. In how many ways 6 boys and 5 girls can be arranged along a row so that

all the girls do not come together

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13. In how many ways 6 boys and 5 girls can be arranged along a row so that

no two girls come together

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14. In how many ways 6 boys and 5 girls can be arranged along a row so that

no two of the same sex come together

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15. Find the number of ways of arranging the letters of the word 'FATHER'so that the relative positions of vowels and consonants are not disturbed.

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16. Find the number of ways of arranging the letters of the word 'KRISHNA'so that

all the vowels come together

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17. Find the number of ways of arranging the letters of the word 'KRISHNA'so that

no two vowels come together

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18. Find the number of ways of arranging the letters of the word 'KRISHNA'so that relative positions of vowels and consonants are not disturbed.

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19. Find the number of ways of arranging 10 persons $A_1, A_2, \ldots\ldots\ldots\ldots A_{10}$ in a row if no two of A_1, A_2 and A_3 come together.

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20. Find the number of ways of arranging 15 students $A_1, A_2, \ldots\ldots\ldots A_{15}$ in a row such that A_1, A_2 and A_3 sit together in specified order

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21. How many numbers between 6000 and 10000 can be formed using the digits 2, 3, 4, 6, 7, 9 without repetition.

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22. Find the number of 4 - digited numbers that can be formed using the digits 2, 4, 5, 7 and 8.

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23. Find the number of 4 - digit numbers that can be formed using the digits 1,2,5,6, 7. How many of them are divisible by i)25

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24. Find the number of 4 digited numbers that can be formed by using the digits 0, 2, 3, 5, 7, 8 which are divisible by

i) 2 ii) 3 iii) 4 i)

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25. If the letters of the word "SIPRON' are arranged in all possible ways and the words thus formed are arranged in dictionary order. Find the rank of the word 'PRISON'.

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26. Find the sum of all 4 - digited numbers that can be formed using 1,3,4,5,7 without repetition.

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27. Find the sum of all 4-digited numbers that can be formed using the digits 0, 2, 3, 4, 6 without repetition.

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28. Find the number of three digited numbers that can be formed using 7,6,8 and 9 when each digit may be used any number of times ?

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29. Find the number of six digited numbers that can be formed using 1,7,8.

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30. Find the number of 5 letter words that can be formed using the letters of the word 'MIXTURE' which begin with an vowel when repetitions are allowed.

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31. How many 4 digited numbers can be formed using 0, 1, 2,3,4 when repetition is allowed.

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32. Find the number of 4 letter words that can be formed using the letters of the word 'ARTICLE' in which atleast one letter is repeated.

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33. 10 different letters of an alphabet are given. Find the number of 5 letter words that can be formed using 10 letters which have

(i) no letter repeated

(ii) atleast one letter repeated

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34. Find the number of 3 digit numbers that can be formed using using the digits 1,2, 3, 4, 5, 6 with an odd digit in the middle place when repetition is allowed.

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35. If a set A has 6 elements find the number of elements in the power set of A.

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36. If a set A has 3 elements and B has 5 elements, find the number of injections from A to B.

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37. If a set X has 5 elements, then find the number of bijections from X onto itself.

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38. Find the number of 4 digit numbers divisible by 5 that can be formed using the digits 1, 2, 3, 4, 5 when repetition of digits is allowed.

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39. Find the number of 4- digit numbers that can be formed using the digits 1,2,3,4,5,6 that are divisible by (i) 2 (ii) 3 when repetition is allowed.

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40. Find the number of 4-digit numbers that can be formed using the digits 0, 1,2, 3, 4, 5 which are divisible by 6 when repetition of the digits is allowed

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41. The number of ways in which four letters can be put in four addressed envelops so that no letter goes into envelope meant for it is

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42. Find the number of ways to arrange 8 persons around a circle by taking 4 at a time.

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43. Find the number of ways of arranging 5 boys and 5 girls around a circle ?

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44. Find the number of ways of preparing a chain with 6 different coloured beads.

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45. A round table conference is attended by 3 Indains, 3 Chinese, 3 Canadians and 2 Americans. Find the number of ways of arranging them at the round table so that the delegates belonging to same country sit together.

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46. Find the number of ways of arranging 6 red roses and 3 yellow roses of different sizes into a garland. In how many of them (i) all the yellow roses are together (ii) no two yellow roses are together

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47. Find the number of ways of arranging 6 boys and 6 girls around a circular table so that (i) all the girls sit together (ii) no two girls sit together (iii) boys and girls sit alternately.

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48. Find the number of ways of arranging 8 men and 4 women around a circular table. In how many of them

all the women come together

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49. Find the number of ways of arranging 8 men and 4 women around a circular table. In how many of them

no two women come together

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50. Find the number of ways of arranging 5 men and 3 women around a round table so that

all the three women sit together.

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51. Find the number of ways of arranging 5 men and 3 women around a round table so that

no two women sit together.

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52. Find the number of ways of arranging 5 men and 3 women around a round table so that

all the three women sit together.

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53. A family consists of father, mother, 2 daughters and 2 sons. In how many different ways can they sit at a round table if the 2 daughters wish to sit on either side of the father ?

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54. Garlands are formed using 4 red roses and 4 yellow roses of different sizes.

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55. Garlands are formed using 4 red roses and 4 yellow roses of different sizes.

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56. Find the number of ways of arranging (all) the letters of the following words.

(i) SWIMMING (ii) MISSAMMA

(iii) BROOKEBOND (iv) DECEMBER

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57. Find the number of different words that can be formed using 4 A' s, 3 B's, 2 C' s and one D.

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58. Find the number of ways of arranging the letters of the word $a^4b^3c^5$ in its expanded form.

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59. There are 5 copies each of 4 different books. Find the number of ways of arranging these books in a shelf.

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60. A book store has 'm' copies each of, 'n' different books. Find the number of ways of arranging the books in a shelf in a single row.

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61. How many numbers can be formed using all the digits 1,2,3,4,3,2,1 such that even digits always occupy even places ?

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62. Find the number of 5 digited numbers that can be formed using the digits 2,2,3,3,4. How many of them are greater than 30000.

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63. In how many ways can the letters of the word CHEESE be arranged so that no two E's come together ?

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64. Find the number of ways of arranging the letters of the word

'SHIPPING' such that

(i) 2 P's will come together

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65. Find the number of ways of arranging the letters of the word

'SHIPPING' such that

2 I's do not come together

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66. Find the number of ways of arranging the letters of the word

SINGING so that

they begin and end with I

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67. Find the number of ways of arranging the letters of the word SINGING so that

the two G's come together

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68. Find the number of ways of arranging the letters of the word ARRANGE so that

the two R's come together

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69. Find the number of ways of arranging the letters of the word ARRANGE so that

A occurs at the beginning and at the end

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70. If the letters of the word AJANTA are permuted in all possible ways and the words thus formed are arranged in dictionary order, find the ranks of the words i) AJANTA ii)JANATA.

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71. If $^{2}C_r = 495$, find the possible values of (r).

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72. If $^{12}C_{(s+1)} = {}^{12}C_{(2s-5)}$, then find s.

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73. If ${}^{17}C_{2t+1} = {}^{17}C_{3t-5}$, find t.

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74. Prove that ${}^{10}C_3 + {}^{10}C_4 = {}^{11}C_4$.

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75. Prove that $3 \leq r \leq n$

$${}^{n-3}C_r + 3^{n-3}C_{r-1} + 3^{n-3}C_{r-2} + {}^{n-3}C_{r-3} = {}^nC_r$$

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76. Prove that

$$^{25}C_4 + \sum_{r=0}^{4} {}^{(29-r)}C_3 = {}^{30}C_4$$

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77. In a class there are 30 students. If each student plays a game of chess with each other student, then find the total number of games played by them.

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78. Find the number of ways of selecting 4 boys and 3 girls from a group of 8 boys and 5 girls.

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79. Find the number of ways of forming a committee of 5 members from 6 men and 3 ladies.

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80. 10 persons are sitting in a row. Find the number of ways of selecting two persons out of them who are sitting adjacent to each other

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81. If 30 persons are sitting around a circle. In how many ways can 2 person out of them be selected so that they are not adjacent.

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82. If a set A has 8 elements, find the number of subsets of A containing at least 6 elements.

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83. A set A has 10 elements. Find the number of subsets of A with atmost 4 elements.

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84. A teacher wants to take 20 students to a park. He can take exactly 5 students at a time and will not take the same group more than once. Find the number of times that

a particular stadent can go to the park

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85. A teacher wants to take 20 students to a park. He can take exactly 5 students at a time and will not take the same group more than once. Find the number of times that

the teacher can go to the park

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86. Find the number of ways of forming a committee of 5 persons from a group of 4 Indians and 3 Russians such that there are atleast 3 Indians in the committee.

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87. A candidate is required to answer 6 out of 10 questions which are divided into two groups A and B each containing 5 questions. He is not permitted to attepmpt more than 4 questions from either group. Find the nuumber of different ways in which the candidate can choose six questions.

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88. A double decker bus has 15 seats in the lower deck and 13 seats in the upper deck. In how many ways can a marriage party of 28 persons be arranged if 4 old people refuse to go to the upper deck and 4 children wish to travel in the upper deck only.

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89. Find the number of positive divisors of 10800 other than 1 and the number itself.

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90. If ${}^{n}C_5 = {}^{n}C_6$ then find the value of ${}^{13}C_n$.

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91. There are 20 points in a plane of which 5 are collinear and no three of the points are collinear unless all the three are from these 5 points. Find the number of different lines formed.

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92. In how many ways 4 rupee coins can be distributed among 5 persons so that any person may have either 0, 1, 2, 3, 4.

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93. Find the number of sider of the polygon having 90 diagonals.

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94. Out of 3 different books on Economics, 4 different books on political science and 5 different books on Geography, how many collections can be made, if each collection consists of

(i) exactly one book of each subject

(ii) atleast one book of each subject.

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ADDITIONAL SOLVED EXAMPLES

1. Find the number of ways of arranging the letters of the word ORGANIC so that

all vowels come together

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2. Find the number of ways of arranging the letters of the word ORGANIC so that

no two vowels come together

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3. Find the number of ways of arranging the letters of the word ORGANIC so that

the relative positions of vowels and consonants are not disturbed

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4. How many 4 letter words can be formed using the letters of the word 'ARTICLE' such that the words do not contain A

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5. How many 4 letter words can be formed using the letters of the word 'ARTICLE' such that

the words contain A but bot E

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6. How many 4 letter words can be formed using the letters of the word 'ARTICLE' such that

each word must contain atleast one vowel.

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7. Find the number of ways of arranging the letters of the word 'FATHER' so that no vowel occupies even place.

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8. Find the number of ways of arranging 15 students $A_1, A_2, \ldots\ldots, A_{15}$ in a row such that

A_2 must be seated after A_1 and A_2 must come after A_2

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9. Find the number of ways of arranging 15 students $A_1, A_2, \ldots\ldots, A_{15}$ in a row such that

neither A_2 nor A_3 be seated before A_1

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10. If the letters of the word 'STREAM' are arranged in all possible ways and the words thus formed are arranged as in a dictionary. Find the word whose rank is 257.

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11. Find the number of ways in which 4 boys and 4 girls can be arranged along a row such that atleast one of the first 3 places must be arranged with a girl.

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12. Find the number of ways to arrange 8 persons around circular table if

two specified persons wish to sit together

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13. Find the number of ways to arrange 8 persons around circular table if

never sit together

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14. In how many ways 20 different coloured flowers can be arranged into a garland by taking 10 at a time so that 2 specified colours must occur in the garland but not come together.

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15. Find the number of different ways of preparing a garland using 6 distinct red roses and 4 distinct yellow roses such that no two yellow roses come to gether?

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16. Find the number of arrangements by arranging all the letters of the word BANANA so that the two N's are never together.

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17. Find the number of ways of arranging the letters of the word 'BRINGING' so that they begin and end with I.

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18. If $^{n}P_{r} = 30240$and $^{n}C_{r} = 252$ then the ordered pair (n,r)=

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19. Find the least value of n so that ${}^{n-1}C_3 + {}^{n-1}C_4 > {}^{n}C_3$

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20. Show that

$${}^{10}C_2 + {}^{11}C_2 + {}^{12}C_2 + {}^{13}C_2 + \ldots\ldots + {}^{20}C_2 = {}^{21}C_3 - {}^{10}C_3$$

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21. Find the number of ways in which 3 numbers in A.P. can be selected from 1, 2, 3,........ 21.

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22. Find the number of ways of selecting 5 objects from 9 dissimilar objects such that (i) a particular object is included (ii) a particular object is not included.

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23. For a cricket trem people from one class and 8 people from another class have come for selection . In how ways can we select a cricket team of 11 people taking at least 2 from the firstt class and at least one form another class ?

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24. How many 4 letter words can be formed using the letters of the word 'PROPORTION'.

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25. Find the number of selections of 10 balls from unlimited number of red, black, white and green balls so that each selection must contain atleast one ball of each colour.

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26. Find the number of selections of 10 balls from unlimited number of red black and white balls.

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27. There are 14 intermediate railway stations between Vijayawada and Hyderabad. In how many ways can a train be stopped at 3 of these stations such that no two of them are consecutive?

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28. Out of 8 gentlemen and 5 ladies a committee of 5 is to be formed. Find the number of ways in which this can be done so as to include atleast 2 ladies.

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29. There are 4 mangoes, 3 apples 2 oranges in bag, fruits of the same variety being identical. In how many different ways can a selection of fruits be made if

atleast one fruit is to be selected.

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30. There are 4 mangoes, 3 apples 2 oranges in bag, fruits of the same variety being identical. In how many different ways can a selection of fruits be made if

atleast one mango is to be selected.

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31. There are 4 mangoes, 3 apples 2 oranges in bag, fruits of the same variety being identical. In how many different ways can a selection of fruits be made if

atleast one fruit is to be selected.

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32. Find the number of proper divisors of 2520.

(i) How many of them are odd. Find their sum.

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33. Find the number of proper divisors of 2520.

How many of them are divisible by 10. Find their sum.

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34. How many selections of atleast one red ball can be made from 4 red balls and 3 green balls if balls of same colour are different in size.

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35. Find the number of ordered pairs (x,y) such that L.C.M. of x and y is 2520.

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36. Find the number of non negative integral solutions of $x_1 + x_2 + x_3 + x_4 \leq 20$

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37. Find the number of integral solutions of $x_1 + x_2 + x_3 + x_4 = 4$ where each $x_i \geq -10$

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38. How many integral solutions are there to the systems of equations $x_1 + x_2 + x_3 + x_4 + x_5 = 20$ and $x_1 + x_2 = 15$ where $x_k \geq 0$.

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39. In how many ways can 5 post letters of which 3 are alike and two are distinct be posted in 4 different boxes.

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40. Find the number of positive integral solutions of $x_1x_2x_3x_4 = 1050.$

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41. Find the number of positive integral solutions of $x_1x_2x_3 = 30$

.

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42. Find the number of positive integral solutions of $x_1 x_2 x_3 = 54$ where $x_1, x_2, x_3 \neq 1$

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43. Find the number of non-negative solution of $3x + y + z = 24$

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44. In how many ways the number 18900 can be split in to two factors which are relative prime.

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45. What is the largest positive integer n such that $\lfloor 33$ is divisible by 2".

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46. Find the exponent of 2 in ${}^{20}C_{10}$.

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47. Find the number of proper divisors of $\lfloor 15$

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48. Find the number of zeros at the end of $(100)!$

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49. In how many ways can 100 persons can be arranged along a row so that two specified persons must always be separated by exactly 7 of them.

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50. In how many ways can 10 men and 10 women be divided into 10 couples, each consisting of a man and woman.

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51. Find the number of onto functions that can be defined from a set $A = \{a_1, a_2, \ldots\ldots, a_n\}$ onto another set $B = \{x, y\}$ such that a_1 is always mapped to x.

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52. How many on-to functions can be defined from a set $A = \{a_1, a_2, \ldots\ldots, a_n\}$ to another set $B = \{x, y, z\}$ such that a_1 is always mapped to x.

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53. In a class room there are 10 rows and in each row there are 2 chairs. In how many ways 10 boys and 10 girls can be arranged in these 20 chairs so that in each row one girl and one boy must be seated.

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54. How many different 5-digited numbers can be made, the sum of whose digits is even.

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55. How many 5 digited numbers can be made with odd digits so that no two consecuitive digits are same.

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56. Consider $A = \{1, 2, 3, \ldots\ldots, 10\}$ Find the sum of all products of numbers by taking one or more from A.

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57. In how many ways 5 couples can be arranged along a row so that no husband sits befors his wife.

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58. Show that the number of ways to select 'r' objects from n distinct objects which are arranged along a row so that no two of the selected objects are consecutive is ${}^{n-r+1}C_r$. Where $n \geq 2r - 1$.

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59. n different things are arranged along a circle. In how many ways can '3' objects be selected such that no two of the selected objects are consecutive.

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60. Five balls are placed in three boxes. Each box can hold all the five balls. In how many different ways can we place the balls in the boxes so that no box remains empty if

the balls and the boxes are different

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61. Five balls are placed in three boxes. Each box can hold all the five balls. In how many different ways can we place the balls in the boxes so that no box remains empty if

the balls are identical but the boxes are different

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62. Five balls are placed in three boxes. Each box can hold all the five balls. In how many different ways can we place the balls in the boxes so that no box remains empty if

the balls are different but the boxes are identical.

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63. Five balls are placed in three boxes. Each box can hold all the five balls. In how many different ways can we place the balls in the boxes so that no box remains empty if

the balls as the boxes are identical.

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64. In howmany ways can a team of 6 horses be selected out of stud of 16 so that there shall always be 3 out of A, B, C, A', B,'C' but never A A', BB', or CC' together.

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65. There are n pairs of shoes in a closet. If $r(< n)$ are selected at random then the number of ways that among the selected shoes

there is no pair is ${}^{n}C_{r}.2^{r}$

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66. There are n pairs of shoes in a closet. If $r(< n)$ are selected at random then the number of ways that among the selected shoes

there is atleast one pair is ${}^{2n}C_{1}.\,{}^{n-1}C_{r-2}.2^{r-2}$

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67. There are n pairs of shoes in a closet. If $r(< n)$ are selected at random then the number of ways that among the selected shoes

there is exactly one pair is ${}^{n}C_{1}.\,{}^{n-1}C_{r-2}.2^{r-2}$

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68. There are n pairs of shoes in a closet. If $r(<n)$ are selected at random then the number of ways that among the selected shoes

there are exactly 2 pairs is ${}^{n}C_{2}.\,{}^{n-2}C_{r-4}.2^{r-4}$

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EXERCISE -1.1 VERY SHORT ANSWER QUESTIONS

1. If ${}^{n}P_{4}=1680,$ find n.

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2. If ${}^{12}P_r = 1320$, find r.

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3. If ${}^{n}P_7 = 42.\,{}^{n}P_5.$ find n.

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4. If ${}^{(n+1)}P_5 : {}^{n}P_5 = 3:2$, find n

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5. If ${}^{56}P_{r+6} : {}^{54}P_{(r+3)} = 30800:1$ then find r.

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6. If ${}^{12}P_5 + 5.\,{}^{12}P_4 = {}^{13}P_r$, find r.

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7. A man has 4 sons and there are 5 schools within his reach. In how many ways can he admit his sons in the schools so that no two of them will be in the same school.

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8. In a class there are 30 students. On the New year day, every student posts a greeting card to all his ther classmates. Find the total number of greeting cards posted by them.

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9. Find the number of ways of arranging the letters of the word TRIANGLE so that the relative positions of the vowels and consonants are not disturbed.

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10. Find the number of ways of arranging the letters of the word MONDAY so that no vowel occupies even place.

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11. Find the number of ways in which 5 red balls, 4 black balls of different sizes can be arranged in a row so that

the balls of the same colour come together.

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12. Find the number of ways of arranging 4 boys and 3 girls so that the row begins with a boy and ends with a girl.

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13. Find the number of ways of arranging 5 boys and 4 girls in a line so that the line begins and ends with a boy.

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EXERCISE -1.1 SHORT ANSWER QUESTIONS

1. Find the number of 4 letter words that can be formed using the letters of the word EQUATION. How many of these words begin with E ? How many end with N ? How many begin with E and end with N ?

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2. Find the number of 4 letter words that can be formed using the letters of the word MIXTURE which

Contain the letter X

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3. Find the number of 4 letter words that can be formed using the letters of the word MIXTURE which

do not contain the letter X

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4. Find the number of 4- letter words that can be formed using the letters of the word. MIRACLE. How many of them begin with an vowel

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5. Find the number of 4- letter words that can be formed using the letters of the word. MIRACLE. How many of them begin and end with vowels

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6. Find the number of 4-letter words that can be formed using the letters of the word MIRACLE. How many of them end with a consonant ?

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7. Find the number of ways of permuting the letters of the word PICTURE so that

all vowels come together

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8. Find the number of ways of permuting the letters of the word PICTURE so that

no two vowels come together

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9. Find the number of ways of arranging 6 boys and 6 girls in a row so that

all the girls sit together

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10. Find the number of ways of arranging 6 boys and 6 girls in row. In how many of these arrangements.

no two girls are together

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11. Find the number of ways of arranging 6 boys and 6 girls in row. In how many of these arrangements.

boys and girls come alternately ?

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12. Find the number of ways of arranging 6 boys and 6 girls in a row so that no two boys sit together

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13. Find the number of ways of arranging 5 different mathematics books, 4 different Physics books and 3 different chemistry books such that the books of the same subject are together.

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14. In how many ways 9 mathematics papers can be arranged so that the best and the worst (i) may come together (ii) may not come together ?

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15. Find the number of ways of seating 10 students $A_1, A_2 \ldots \ldots A_{10}$ in a row such that (i) A_1, A_2, A_3 sit together (ii) A_1, A_2, A_3 sit in a specified order (iii) A_1, A_2, A_3 sit together ina specified order.

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16. Find the number of ways of seating 10 students $A_1, A_2 \ldots \ldots A_{10}$ in a row such that (i) A_1, A_2, A_3 sit together (ii) A_1, A_2, A_3 sit in a specified order (iii) A_1, A_2, A_3 sit together ina specified order.

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17. In how many ways 10 persons $A_1, A_2, A_3, A_4, \ldots \ldots \ldots, A_{10}$ can be seated along a row such that

A_1, A_2, A_3 sit together in a specified order

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18. The number of ways in which ten candidates $A_1, A_2, A_3, A_4, \ldots\ldots, A_{10}$ can be arranged in a row

If A_1 is always above A_2 and A_2 is above A_3 is

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19. How many numbers that can be prepared using the digits 0,2,4,6,8 without repetition which are greater than 4000.

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20. How many four digited numbers can be formed using the digits 1,2,5,7,8,9 ?

How many of them begin with 9 and end with 2 ?

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21. Find the number of 4-digit numbers that can be formed using the digits 2,3,5,6,8 (without repetition). How many of them are divisible by

i) 2 ii) 3 iii) 4 iv) 5 v) 25

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22. If the letters of the word 'RUBLE' are arranged in all possible ways and the words thus formed are arranged in the dictionary order then find the rank of 'LUBER'

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23. If the letters of the word MASTER are permuted in all possible ways and the words thus formed are arranged in the dictionary order, then find the ranks of the words

i) REMAST ii) MASTER

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24. Find the sum of all five digited numbers that can be formed using the digits 1, 2, 3, 7, 9.

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25. Find the sum of all 4- digited numbers that can be formed using the digits 1,3,5,7,9.

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26. Find the sum of all 4 digited numbers that can be formed using the digits 0,2,4,7,8 without repetition.

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27. Suppose that 'n' letters are written to 'n' different persons and their addresses are written on 'n' different envelops. Find the number of ways in which these letters can be put in the envelopes (one in each) such that atleast one letter does not go into the corresponding envelope.

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28. If the letters of the word BRING are permuted in all possible ways and the words thus formed are arranged in the dictionary order, then find the 59th word.

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29. There are 9 objects and 9 boxes. Out of 9 objects, 5 cannot fit in three small boxes. How many arrangements can be made such that each object can be put in one box only.

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EXERCISE -1.2 VERY SHORT ANSWER QUESTIONS

1. Find the number of 4- digited numbers that can be formed using the digits 1,2,4,5,7,8 when repetition is allowed.

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2. Find the number of 5 letter words that can be formed using the letters of the word RHYME if each letter can be used any member of times.

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3. Find the number of four digited number that can be formed using the digits 1,2, and 3.

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4. Find the number of 5 letter words that can be formed using the letters of the word NAUTRE that begin with N when repetition is allowed.

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5. Find the number of 5 - letter words that can be formed using the letters of the word EXPLAIN that begin and end with a vowel when repetitions are allowed.

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6. Find the number 5-digit number s that can be formed using the digits, 0, 1, 2 3, 4, 5 if each digit can be used any number of times,

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7. Find the number of ways of arranging 'r' things in a line using the given 'n' different things in which atleast one thing is repeated.

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8. Find the number of 4 - digit telephone numbers that can be formed using the digits 1,2,3,4,5,6 with atleast one digit repeated.

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9. Find the number of 4 letter words that can be formed using the letters of the word PISTON in which atleast one letter is repeated.

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10. 9 Different letters of an alphabet are given. Find the number of 4 letter words that can be formed using these 9 letters which have (i) no letter is repeated (ii) atleast one letter is repeated.

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11. A number lock has 3 rings and each ring has 9 digits 1, 2, 3,......, 9. Find the maximum number of unsuccessful attempts that can be made by a thief who tries to open the lock without knowing the key code.

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12. Find the the number of functions from a set A containing 5 elements into a set B containing 4 elements.

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13. Find the number of injections from a set A containing 4 elements into a set B containing 6 elements.

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14. Find the number of surjections from a set A containing 6 elements into a set B containing 2 elements.

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15. Find the number of bijections from a set A containing 7 elements onto itself.

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16. Find the number of (i) 6 (ii) 7 letter palindromes that can be formed using the letters of the word EQUATION.

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17. Find the number of seven digited palindromes that can be formed using 0,1,2,3,4.

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EXERCISE -1.2 SHORT ANSWER QUESTIONS

1. Find the number of numbers less than 2000 that can be formed using the digits, 1,2,3,4 if repetition is allowed.

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2. Find the number of 4-digit even numbers that can be formed using the digits 0, 2, 5, 7, 8 when repetitions are allowed.

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3. Find the number of 4- digit numbers that can be formed using the digits 1,2,3,4,5,6 that are divisible by (i) 2 (ii) 3 when repetition is allowed.

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4. Find the number of 5 - digit numbers divisible by 5 that can be formed using the digits 0,1,3,4,5 when repetition is allowed.

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5. Find the number of 5-digited numbers that can be formed using the digits 0,1, 2, 3, 4 that are divisible by 4 when repetitions are allowed.

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6. Find the number of 4-digit numbers that can be formed using the digits 0, 1,2, 3, 4, 5 which are divisible by 6 when repetition of the digits is allowed

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EXERCISE -1.3 VERY SHORT ANSWER QUESTIONS

1. Find the number of ways of arranging 8 persons around a circle

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2. Find the number of ways of arranging 5 boys and 5 girls around a circle.

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3. Find the number of ways of arranging 8 persons around a circle if two particular persons wish to sit together.

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4. Find the number of ways of arranging 4 boys and 3 girls around a circle so that all the girls sit together.

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5. Find the number of ways of arranging 7 gents and 4 ladies around a circular table if no two ladies wish to sit together.

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6. Find the number of necklaces that can be prepared using 7 different coloured beads.

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7. Find the numberof ways of preparing a garland with 3 yellow, 4 white and 2 red roses of different sizes such that the two red roses come together.

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8. Find the number of different ways of preparing a garland using 7 distinct red roses and 4 distinct yellow roses such that no two yellow roses come together.

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EXERCISE -1.3 SHORT ANSWER QUESTIONS

1. Find the number of ways of arranging 6 boys and 6 girls around a circular table so that

all the girls sit together

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2. Find the number of ways of arranging 6 boys and 6 girls around a circular table so that (i) all the girls sit together (ii) no two girls sit together (iii) boys and girls sit alternately.

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3. Find the number of ways of arranging 6 boys and 6 girls around a circular table so that boys and girls sit alternately

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4. Find the number of ways of seating 5 Indians. 4 A mericans and 3 Russians at a round table so that

all Indians sit together

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5. Find the number of ways of seating 5 Indians, 4 Americans and 3 Russians at a round table so that

no two Russians sit together

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6. Find the number of ways of seating 5 Indians. 4 A mericans and 3 Russians at a round table so that

persons of same nationality sit together

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7. Find the number of ways of arranging the chief minister and 10 cabinet ministers at a circular table so that the chief minister always sits in a particular seat.

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8. Find the number of ways of arranging 7 guests and a host around a circle if 2 particular guests wish to sit on either side of the host.

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9. Find the number of ways of arranging 6 red roses and 3 yellow roses of different sizes into a garland. In how many of them (i) all the yellow roses are together (ii) no two yellow roses are together

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10. Find the number of ways of arranging 6 red roses and 3 yellow roses of different sizes into a garland. In how many of them

no two yellow roses are together

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11. A chain of beads is to be prepared using 6 different red coloured beads and 3 different blue coloured beads. In how many ways can this be done so that no two blue coloured beads come together.

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EXERCISE -1.4 VERY SHORT ANSWER QUESTIONS

1. Find the number of ways of arranging all the letters of the word MATHEMATICS

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2. Find the number of ways of arranging the letters of the word. INDEPENDENCE

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3. Find the number of ways of arranging the letters of the word.

COMBINATION

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4. Find the number of ways of arranging all the letters of the word

ENGINEERING

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5. Find the number of ways of arranging the letters of the word.

SINGING

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Watch Video Solution

6. Find the number of ways of arranging the letters of the word.

PERMUTATION

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7. Find the number of ways of arranging the letters of the word.

INTERMEDIATE

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8. Find the number of ways of arranging all the letters of the word $x^3y^5z^7$ in expanded from.

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9. Find the number of 7 - digit numbers that can be formed using 2,2,2,3,3,4,4.

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10. There are 4 copies (alike) each of 3 different books. Find the number of ways of arranging these 12 books in a shelf in single row.

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11. In a library, there are 6 copies of one book, 4 copies each of two different books, 5 copies each of three different books and 3 copies each of two different books. Find the number of ways of arranging all these books in a shelf in a single row.

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EXERCISE -1.4 SHORT ANSWER QUESTIONS

1. Find the number of 5-digited numbers that can be formed using the digits 1, 1, 2, 2, 3. How many of them are even.

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2. Find the number of 5 - digit numbers that can be formed using the digits 0,1,1,2,3.

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3. Find the number of ways of arranging the letters of the word SPECIFIC. In how many of them the two C's come together

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4. Find the number of ways of arranging the letters of the word SPECIFIC. In how many of them

the two I's do not come together

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5. In how many ways the letters of the word 'ARRANGE' can be arranged so that the relative positions of vowels and consonants are not disturbed.

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6. How many ways can the letters of the word 'BANANA' be arranged so that

all A's come together

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7. How many ways can the letters of the word 'BANANA' be arranged so that

no two A's come together

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8. In how many ways the letters of the word 'ASSOCIATIONS' can be arranged so that

all S's come together

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9. In how many ways the letters of the word 'ASSOCIATIONS' can be arranged so that

the 2A's do not come together

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10. Find the number of ways of arranging the letters of the word MISSING so that the two S's are together and the two I's are together.

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11. How many ways can the letters of the word ENGINEERING be arranged so that 3N's come together but the 3E'S do not come together

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12. If the letters of the word EAMCET are permuted in all possible ways and if the words thus formed are arranged in the dictionary order, find the rank of the word EAMCET.

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13. If the letters of the word AJANTA are permuted in all possible ways and the words thus formed are arranged in dictionary order, find the ranks of the words i) AJANTA ii)JANATA.

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EXERCISE -1.5 VERY SHORT ANSWER QUESTIONS

1. If ${}^{n}C_{4} = 210$ then find n.

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2. If ${}^{13}C_{r} = 715$, then find possible values of r.

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3. If $10.\ {}^{n}C_{2} = 3.\ {}^{n+1}C_{3}$ find n.

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4. If ${}^{n}C_{4} = {}^{n}C_{6}$, find n.

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5. If ${}^{12}C_{r+1} = {}^{12}C_{3r-5},$ find r.

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6. If ${}^{n}C_{21} = {}^{n}C_{28}$, then find ${}^{50}C_{n}$

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7. If ${}^{9}C_{3} + {}^{9}C_{5} = {}^{10}C_{r}$ then find r.

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8. Find the value of ${}^{10}C_{5} + 2.\,{}^{10}C_{4} + {}^{10}C_{3}$.

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9. Simplify $^{34}C_5 + \sum_{r=0}^{4} {}^{(38-r)}C_4$.

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10. If $^nP_r = 5040 \text{ and } ^nC_r = 210,$ find n and r.

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11. Find the number of ways of selecting 7 members from a contingent of 10 soldiers

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12. Find the number of ways of selecting 3 girls and 3 boys out of 7 girls and 6 boys.

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13. Find the number of ways of selecting 3 vowels and 2 consonants from the letters of the word EQUATION.

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14. Find the number of ways of selecting 4 English, 3 Telugu and 2 Hindi books out of 7 English, 6 Telugu and 5 Hindi books.

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15. Find the number of ways of selecting a committee of 6 members out of 10 members always including a specified member.

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16. Find the number of ways of selecting 5 books from 9 different mathematics books such that a particular book is not included.

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17. The number of five letter words can be formed using 3 consonents and 2 vowels from the letters of the word MIXTURE is

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18. 10 persons are sitting in a row. Find the number of ways of selecting two persons out of them who are sitting adjacent to each other.

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19. 10 persons are sitting around a circle. In how many ways can 2 persons be selected so that they are not adjacent.

View Text Solution

20. If a set of 'm' parallel lines intersect another set of 'n' parallel lines (not parallel to the lines in the first set), then find the number of parallelograms formed in this lattice structure.

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21. Find the number of diagonals of a polygon with 12 sides.

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22. If there are 5 alike pens, 6 alike pencils and 7 alike erasers, find the number of ways of selecting any number of (one or more) things out of them.

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23. Find the number of positive divisors of 1080

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24. Find the number of ways of dividing 80 persons into 3 groups containing 35, 25, 20 persons.

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25. Find the number of ways in which 12 things be (i) divided into 4 equal groups (ii) distributed to 4 persons equally.

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26. Find the number of ways in which 12 things be (i) divided into 4 equal groups (ii) distributed to 4 persons equally.

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27. To pass an examination a student has to pass in each of the three papers. In how many ways can a student fail in the examination ?

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EXERCISE -1.5 SHORT ANSWER QUESTIONS

1. Prove that $\frac{{}^{4n}C_{2n}}{{}^{2n}C_{n}} = \frac{1.3, 5......(4n-1)}{\{1.3.5....\,(2n-1)\}^2}$

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2. If a set A has 12 elements, find the number of subsets of A having (i) 4 elements (ii) Atleast 3 elements (iii) Atmost 3 elements.

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3. If a set A has 12 elements, find the number of subsets of A having (i) 4 elements (ii) Atleast 3 elements (iii) Atmost 3 elements.

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4. If a set A has 12 elements, find the number of subsets of A having (i) 4 elements (ii) Atleast 3 elements (iii) Atmost 3 elements.

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5. A person wants to 9 children to an exhibition by taking 3 at a time in all possible ways. How many times does a particular child go to the exhibition and how many times does the person go to the exhibition.

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6. There are 20 points in a plane of which 5 are collinear and no three of the points are collinear unless all the three are from these 5 points. Find the number of different lines formed.

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7. Find the number of ways of forming a committee of 4 members out of 6 boys and 4 girls such that there is atleast one girl in the committee.

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8. Find the number of ways of forming a committee of 5 members out of 6 Indians and 5 Americans so that always the Indians will be in majority in the committee.

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9. Find the numbers of ways of selecting a cricket team of 11 players from 7 batsmen and 6 bowlers such that there will be atleast 5 bowlers in the team.

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10. Find the number of ways of selecting 11 member cricket team from 7 bats men, 6 bowlers and 2 wicket keepers so that the team contains 2 wicket keepers and atleast 4 bowlers.

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11. A double decker minibus has 13 seats in the lower deck and 12 seats in the upper deck. In how many ways can a marriage party of 25 persons be arranged if 4 old people refuse to go to the upper deck and 3 children wish to travel only in the upper deck.

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12. Find the number of ways of giving away 4 similar coins to 5 boys if each boy can be given any member (less than or equal to 4) of coins.

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13. Find the number of 4 - letter words that can be formed using the letters of the word RAMANA.

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14. A question paper is divided into 3 sections A, B, C containing 3,4,5 questions respectively. Find the number of ways of attempting 6 questions choosing atleast one from each section.

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15. A class contains 4 boys and g girls. Every Sundy, five students with atleast 3 boys go for a picnic. A different group is being sent every week. During the picnic, the class teacher gives each girls in the group a doil. If the total number of dolls distributed is 85, find g

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ADDITIONAL EXERCISE

1. The letters of the word VICTORY are permuted in all possible ways and the words thus formed are arranged as in a dictionary . The rank of the word VICTROY is

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2. If the letters of the word 'NORMAL' are arranged in all possible ways and the words thus formed are arranged as in dictionary. Then find the word the rank of which is 455.

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

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4. Find the number of words that can be formed using all the letters of the word "REGULATIONS' such that

E always comes after R

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5. Find the number of words that can be formed using all the letters of the word "REGULATIONS' such that

E, G always come after R

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6. Find the number of words that can be formed using all the letters of the word "REGULATIONS' such that

the vowels must come in a specified order (need not come together)

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7. In how many ways 6 different toys can be distributed among 3 children so that

specified child must get exactly one toy

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8. In how many ways 6 different toys can be distributed among 3 children so that

specified child must get atleast one toy

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9. In how many ways 20 different books can be distributed among 2 students so that each student must get atleast one book

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10. Find the number of 5 - digit numbers divisible by 5 that can be formed using the digits 0,1,3,4,5 when repetition is allowed.

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11. In how many ways 5 persons can be arranged along a round circle containing 5 chairs numbered from 1 to 5

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12. Find the number of ways in which 6 men can sit at a round table so that all shall not have the same neighbours in any two arrangements

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13. In how many ways all the letters of the word 'ARRANGE'can be arranged so that the 2A's are separated by exactly 2 letters

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14. In how many ways the letters of the word "SUCCESS' can be arranged so that E must always occur after U

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15. Find the number of ways of selecting cricket eleven from 20 players such that

Exactly one of Sachin and Dravid must be included

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16. Find the number of ways of selecting cricket eleven from 20 players such that

at least one of Sachin and Dravid must be excluded

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17. In a class there are certain number of students and each student plays a chess game with each other student. If the total number of games played by them is 190. Find the number of students

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18. From the first 20 natural numbers, find the number of ways of selecting two numbers which are not consecutive

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19. Out of 10 persons sitting at a round table, two persons are selected at random then the probability that they are not adjacent to each other is

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20. 10 persons are sitting in a row. Find the number of ways of selecting two persons out of them who are sitting adjacent to each other

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21. Find the number of ways of giving 6 similar coins among 4 boys if

each boy can be given any number of coins.

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22. Find the number of ways of giving 6 similar coins among 4 boys if

each boy must get atleast one coin.

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23. In how many ways a student can fail an examination having 5 subjects.

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24. In a hall, there are 10 different lamps. In how many ways can the hall be lighted.

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25. In a basket, there are 4 apples, 2 mangoes and 5 bananas. Fruits of same kind are identical. Find the total number of selections

without any restrictio

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26. In a basket, there are 4 apples, 2 mangoes and 5 bananas. Fruits of same kind are identical. Find the total number of selections

atleast one fruit

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27. In a basket, there are 4 apples, 2 mangoes and 5 bananas. Fruits of same kind are identical. Find the total number of selections

atleast one banana

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28. Find the number of positive divisors of 1080

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29. Find the number of proper divisors of 540

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30. Find the number of even divisors of 720.

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31. Find the number of even proper divisors of $2^3 3^2 5^3$

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32. In how many ways 4900 can be expressed as product of 2 positive integers

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33. In how many ways 3 different numbers which are in A.P. can be selected from 1, 2, 3, ... 10

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34. Find the maximum number of points into which 4 circles and 4 straight lines intersect

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35. If a set of 'm' parallel lines intersect another set of 'n' parallel lines (not parallel to the lines in the first set), then find the number of parallelograms formed in this lattice structure.

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36. A question paper is divided into 3 sections A, B and C containing 3, 4 and 5 questions respectively. Find the number of ways of attempting 6 questions choosing atleast one from each section

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37. Find the number of ways of forming a committee of 5 members out of 5 men and 5 women so that in the committee women will be in a majority

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38. Find the number of ways of forming a committee of 5 members out of 5 men and 5 women so that in the committee there is atleast one man

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39. Find the number of ways of forming a committee of 5 members out of 6 Indians and 5 Americans so that always the Indians will be in majority in the committee.

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40. In how many ways 40 students of a class can be divided into two equal groups such that the tallest and shortest do not belong to the same group

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41. If 20 persons are sitting in a row, find the number of ways of selecting 3 persons out of them so that no two of the selected three are consecutive.

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42. Find the number of triangles whose angular points are at the angular points of a polygon of 13 sides, but none of whose sides are the sides of the polygon.

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43. Find the number of integers from the set $\{1, 2, 3, \ldots 1000\}$, which are divisible by 3 or 5.

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44. Find the number of positive integers from 1 to 1000. Which are divisible by atleast one of 2, 3 or 5.

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45. There are 4 Oranges, 4 apples and 6 mangoes in a fruit basket. In how many ways can a person makes a selection of one or more fruits from among the fruits in the basket if

all the fruits of same type are identical

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46. There are 4 Oranges, 4 apples and 6 mangoes in a fruit basket. In how many ways can a person makes a selection of one or more fruits from among the fruits in the basket if

all the fruits of same type are different

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47. A binary sequence of length n is a sequence of length n such that each of its terms is either 0 or 1.

How many binary words of length 10 begin with three 0's

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48. A binary sequence of length n is a sequence of length n such that each of its terms is either 0 or 1.

How many end with two l's.

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49. In how many ways can 5boys and 5girls be seated at a round table, if boy B_1 and girl G_1 are not adjacent

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50. Find the number of 4 letter words that can be formed from the letters of the word ALLAHABAD.

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EXERCISE-I

1. If $^{8}P_{r} = {}^{8}P_{r+1}$ then r is

A. 8

B. 6

C. 5

D. 7

Answer: D

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2. If ${}^{n}P_{7} = 42.\ {}^{n}P_{5}.$ find n.

A. 5

B. 7

C. 12

D. 9

Answer: C

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3. IF ${}^{12}P_{r} = {}^{11}P_{6} + 6^{11}P_{5}$, then r=

A. 6

B. 5

C. 7

D. 8

Answer: A

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4. If ${}^{n}P_{4} = 1680,$ find n.

A. 7

B. 10

C. 8

D. 9

Answer: C

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5. The number of different signals that can be made by 5 flags from 8 flags of different colours is

A. 6720

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

C. 8^{5}

D. 5^{8}

Answer: A

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6. A man has 4 sons and there are 5 schools within his reach. In how many ways can he admit his sons in the schools so that no two of them will be in the same school.

A. ${}^{5}C_{4}$

B. ${}^{5}P_{4}$

C. 5^{4}

D. 4^{5}

Answer: B

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7. The number of 3 digit numbers using 1, 2, 3, 4, 5 if no digit is to be used more than once in each number is.

A. 60

B. 56

C. 96

D. 80

Answer: A

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8. Using the digits 0,2,4,6,8 not more than once in any number , the number of 5 digited number that can be formed is

A. 15

B. 24

C. 120

D. 96

Answer: D

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9. Number of permutations that can be made using all the letters of the word MATRIX is

A. 120

B. 240

C. 840

D. 720

Answer: D

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10. Number of 4 letter permutations that can be made from the letters of the word TRIANGLE is

A. ${}^{8}P_{4}$

B. $^8C_4$

C. $8!$

D. $8!4!$

Answer: A

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11. The number of arrangements that can be formed by taking all the letters of the word TENALI that are to begin with T is

A. 720

B. 5040

C. 120

D. 40320

Answer: C

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12. The letters of the word "ARTICLE" are taken four at a time and arranged in all possible ways. The number of arrangements containing 'A' is

A. 60

B. 120

C. 240

D. 480

Answer: D

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13. The number of arrangements which can be made out of the letters of the word 'KANPUR' without changing the relative order (positions) of vowels and consonants, is

A. 48

B. 54

C. 36

D. 18

Answer: A

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14. 10 men and 6 women are to seated in a row so that no two wowen sit together the number of ways they can ne seated is

A. $11!10!$

B. $(11!)(6!5!)$

C. $\frac{10!9!}{5!}$

D. $\frac{11!10!}{5!}$

Answer: D

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15. the number of 3 digited numbers that can be formed that can be formed using $\{1, 2, 3, 4, 5\}$ any number of times is

A. 125

B. 118

C. 120

D. 116

Answer: A

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16. The number of 4 letter words than can be formed using the letters of the word EXPLAIN which begin with an vowel when repetitions are allowed is

A. 1029

B. 207

C. 343

D. 2401

Answer: A

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17. Eight different letters of an alphabet are given . Words of four letters from these are formed the number of such words with at least one letter repeated is

A. $\left(\frac{8}{4}\right)-{}^{8}P_{4}$

B. $8^{4}\left(\frac{8}{4}\right)$

C. $8^{4}-8P_{4}$

D. $8^{4}-\left(\frac{8}{4}\right)$

Answer: C

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18. A letter lock consists of three rings each marked with 5 different letters. Number of maximum attempts to open the lock is

A. 124

B. 125

C. 120

D. 75

Answer: B

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19. Find the the number of functions from a set A containing 5 elements into a set B containing 4 elements.

A. 5^4

B. 4^5

C. $4!$

D. $5!$

Answer: B

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20. The number of injections from Set - A containing 5 elements to a Set -B containing 6 elements is

A. ${}^{6}P_{5}$

B. 6^{5}

C. 5^{6}

D. $7!$

Answer: A

Watch Video Solution

21. The number of onto functions that canbe defined from $A = \{a, b, c, d, e\}$ to $\{1, 2\}$ is

A. 30

B. 0

C. 60

D. 32

Answer: A

Watch Video Solution

22. The number of into functions that can be defined from $A = \{x, y, z, w, t\}$ to $B = \{\alpha, \beta, \gamma\}$ is

A. 150

B. 0

C. 60

D. 93

Answer: D

Watch Video Solution

23. The number of many one functions from $A = \{1, 2, 3\}$ to $B = \{a, b, c, d\}$ is

A. 64

B. 24

C. 40

D. 0

Answer: C

Watch Video Solution

24. The number of constant mappings from $A = \{1, 2, 3, 4...., n\}$ to $B = \{a, b\}$ is

A. $n!$

B. n

C. 2

D. 2^n

Answer: C

Watch Video Solution

25. The number of different arrangements that can be made out of "MISSISSIPI” are

A. $10!$

B. $\frac{10!}{4!4!2}$

C. $\frac{10!}{4!4!}$

D. $\frac{9!}{4!4!}$

Answer: C

Watch Video Solution

26. The number of ways in which 17 billiard balls be arranged in a row if 7 of them are black, 6 are red, 4 are white is

A. $\frac{10!}{6!4!}$

B. $17!$

C. $\frac{17!}{6!7!4!}$

D. $6!7!4!$

Answer: C

Watch Video Solution

27. Number of words that can be formed with letters of the word CORRESPONDENCE is

A. $\frac{14!}{(2!)^4(3!)^2}$

B. $\frac{14!}{(2!)^4 3!}$

C. $\frac{14!}{(2!)^4 2!}$

D. $\frac{14!}{(2!)^3 3!}$

Answer: B

Watch Video Solution

28. The number of ways to rearrange the letters of the word CHEESE is

A. 100

B. 115

C. 119

D. 120

Answer: C

Watch Video Solution

29. The number of ways can 8 students sit round the table are

A. $8!$

B. $7!$

C. $\frac{8!}{2}$

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

Answer: B

Watch Video Solution

30. The number of ways that 8 beads of different colours be strung as a necklace is

A. 2520

B. 2880

C. 4320

D. 5040

Answer: A

Watch Video Solution

31. The number of ways can 11 persons sit around a table so that all shall not have the same neighbours in any two arrangements is

A. $10!$

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

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

D. $11!$

Answer: B

Watch Video Solution

32. The number of ways in which 5 different coloured flowers be strung in the form of a garland is

A. 24

B. 12

C. 16

D. 22

Answer: B

Watch Video Solution

33. The number of circular permutations of 8 things taken 4 at a time in both directions is

A. 720

B. 420

C. 540

D. 35

Answer: B

Watch Video Solution

34. Number of necklaces of 8 beads each can be made from 15 beads of various colours is

A. $\frac{^{15}P_8}{7}$

B. $\frac{1}{2}\cdot\frac{^{15}P_8}{8}$

C. $\frac{1}{2}\cdot\frac{^{15}P_6}{6}$

D. $\frac{1}{2}\cdot\frac{^{15}P_8}{8}$

Answer: B

Watch Video Solution

35. The sum of all the numbers formed by taking all the digits from 2, 3, 4, 5 is

A. 6660000

B. 93325

C. 93324

D. 10368000

Answer: C

Watch Video Solution

36. The sum of all the numbers formed by taking all the digits from 2, 3, 4, 5 is

A. 6666600

B. 566666600

C. 6656600

D. 6665600

Answer: A

Watch Video Solution

37. There are 3 letters and 3 addressed envelopes coorresponding to their . The number of ways in which the letters be placed in the envelopes so that no letter is in the right envelope is

A. 5

B. 3

C. 1

D. 2

Answer: D

Watch Video Solution

38. The number of ways in which four letters can be put in four addressed envelops so that no letter goes into envelope meant for it is

A. 7

B. 9

C. 4

D. 2

Answer: B

Watch Video Solution

39. The positive integer r, such that $^{15}C_{3r} = {}^{15}C_{r+3}$ is equal to

A. 3

B. 4

C. 5

D. 2

Answer: A

Watch Video Solution

40. n and r integers such that $1 \leq r \leq n$, then n. ${}^{n-1}C_{r-1}$ is

A. ${}^{n}C_{r}$

B. $n.\,{}^{n}C_{r}$

C. $r.\,{}^{n}C_{r}$

D. $(n-1){}^{n}C_{r}$

Answer: C

Watch Video Solution

41. If ${}^{n}C_{3} = 10$, then n is

A. 6

B. 5

C. 4

D. 7

Answer: B

Watch Video Solution

42. If ${}^nC_r$ denotes the number of combinations of n things taken r things at a time, then the expression ${}^nC_{r+1} + {}^{n+1}C_r + 2{}^nC_r$ is

A. ${}^{n+2}C_{r+1}$

B. ${}^{n+1}C_r$

C. ${}^{n+1}C_{r+1}$

D. ${}^{n+2}C_r$

Answer: A

View Text Solution

43. If ${}^{8}C_{3} + {}^{(n+2)}C_{4} = {}^{9}C_{4}$, then n is

A. 6

B. 10

C. 12

D. 15

Answer: A

View Text Solution

44. IF $C(2n, 3) : C(n, 2) = 12 : 1$, then n=

A. 4

B. 5

C. 6

D. 15

Answer: B

Watch Video Solution

45. The number of ways in which a team of 6 players can be chosen from 11 players is

A. ${}^{11}C_4$

B. ${}^{11}C_5$

C. ${}^{11}P_6$

D. $6!$

Answer: B

Watch Video Solution

46. The number of diagonals in a polygon of 10 sides is

A. 32

B. 38

C. 40

D. 35

Answer: D

Watch Video Solution

47. If these are 8 points on a circle,

then number of different line segments formed by joining these points is

A. 28

B. 38

C. 48

D. 58

Answer: A

View Text Solution

48. If these are 8 points on a circle,

Number of triangles formed by joining these points is

A. 56

B. 46

C. 36

D. 48

Answer: A

Watch Video Solution

49. There are 10 parallel lines intersected by a family of 5 parallel lines. The number of parallelograms thus formed in the net work is

A. 225

B. 450

C. 730

D. 600

Answer: B

Watch Video Solution

50. The number of rectangles formed in a chess board is

A. ${}^8C_2 . {}^8C_2$

B. ${}^{64}C_4$

C. ${}^9C_2 . {}^9C_2$

D. ${}^8C_2$

Answer: C

Watch Video Solution

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

A. 880

B. 879

C. 630

D. 629

Answer: B

Watch Video Solution

52. Numbar of different sums that can be formed with half rupee coin, a twenty five paise coin, a ten paise coin, a five paise coin is

A. 5

B. 10

C. 15

D. 20

Answer: C

Watch Video Solution

Watch Video Solution

53. a man has 4 friends , in how many ways can he inivite one or more them to dinner ?

A. 15

B. 30

C. 60

D. 120

Answer: A

Watch Video Solution

54. The number of divisors of $7!$ is

A. 24

B. 72

C. 64

D. 60

Answer: B

Watch Video Solution

55. The sum of divisors of $2^5 3^4 5^3$ is

A. 60

B. 120

C. 1189188

D. 1378154

Answer: C

Watch Video Solution

56. The number of ways can 9 things be divided equally among 3 persons is

A. ${}^{9}P_{3}{}^{6}P_{3}{}^{3}P_{3}$

B. $\dfrac{9!}{(3!)^{4}}$

C. $\dfrac{9!}{(3!)^{3}}$

D. $\dfrac{9!}{3!}$

Answer: C

Watch Video Solution

57. The number of ways in which 9 things can be divided into 3 equal groups in

A. $\dfrac{9!}{3!}$

B. $\dfrac{9!}{(3!)^4}$

C. $\dfrac{9!}{(3!)^3}$

D. ${}^9C_3$

Answer: B

View Text Solution

58. In how many ways can 52 cards be divided among 4 players so that each may have 13 is

A. $\dfrac{52!}{13!^4}$

B. $\dfrac{52!}{(13!^4)4!}$

C. $\dfrac{52!}{(13!)^5}$

D. ${}^{52}P_{13}$

Answer: A

Watch Video Solution

59. The number of ways of awaring 9 scholarships among three students so that each may have 3 scholarships is

A. 280

B. 84

C. 504

D. 1680

Answer: D

Watch Video Solution

60. The number of ways of dividing 10 books into 3 group of 5,3,2, books respectively is

A. $\frac{8!}{6!5!4!}$

B. $\frac{9!}{5!4!3!}$

C. $\frac{10!}{5!3!2!}$

D. $\frac{12!}{7!5!2!}$

Answer: C

Watch Video Solution

EXERCISE-II

1. $1 + 1.1! + 2.2! + 3.3! + \ldots\ldots + n.n!$ is equal to

A. $n!$

B. $(n-1)!$

C. $(n+1)!$

D. n

Answer: C

Watch Video Solution

2. If ${}^{n}P_{5}+5.\,{}^{n}P_{4}={}^{10}P_{r}$ then 'r' is

A. 5

B. 4

C. 3

D. 7

Answer: A

Watch Video Solution

3. If ${}^nP_r = 3024$ then (n,r) is

A. (4,9)

B. (9,4)

C. (9,6)

D. (6,9)

Answer: B

Watch Video Solution

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

A. 17

B. 38

C. 41

D. 52

Answer: C

Watch Video Solution

5. On a railway route there are 15 stations. The number of tickets required in order that it may be possible to book a passenger from every station to every other is

A. 105

B. 210

C. $15!$

D. $15!/2!$

Answer: B

Watch Video Solution

6. The number of ways of 3 scholarships of unequal value be awarded to 17 candidates, Such that no candidate gets more than one scholarship is

A. ${}^{17}C_3$

B. 17^3

C. 3^{17}

D. ${}^{17}P_3$

Answer: C

Watch Video Solution

7. On a new year day every student of a class sends a card to every other student. The postman delivers 600 cards. The number of students in the class are

A. 42

B. 34

C. 25

D. 52

Answer: C

Watch Video Solution

8. The number of other permutations of the letters of the word SIMPLETON taken all at a time is

A. $\frac{8!}{2}$

B. $8! - 1$

C. $\frac{9!}{2}$

D. $9! - 1$

Answer: D

Watch Video Solution

9. The letters of the word "ARTICLE" are taken four at a time and arranged in all possible ways. The number of arrangements containing 'R' and not containing 'E' is

A. 60

B. 120

C. 480

D. 240

Answer: D

Watch Video Solution

10. The number of arrangements that can be formed out of GANESHPURI so that

The letter 'G' always occurs in first place is

A. $9!$

B. $8!$

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

D. $10!$

Answer: A

Watch Video Solution

11. The number of arrangements that can be formed out of GANESHPURI so that

The vowels are always together is

A. $6!4!$

B. $7!3!$

C. $7!4!$

D. $7!^8P_4$

Answer: C

Watch Video Solution

12. The number of arrangements that can be formed out of GANESHPURI so that

The vowels occupy even places are

A. ${}^5P_4 . {}^5P_5$

B. ${}^5P_4 . {}^6P_6$

C. ${}^5P_4 . {}^6P_4$

D. ${}^5C_4 . {}^6P_6$

Answer: B

Watch Video Solution

13. The number of arrangements that can be formed with the letters of the word ORDINATE, so that the vowels occupy odd places are

A. 24

B. 576

C. 625

D. 512

Answer: B

Watch Video Solution

14. The letters of the word "HOSTEL' are arranged so that vowels occupy the end places. Then the number of arrangements is

A. 48

B. 96

C. 110

D. 42

Answer: A

Watch Video Solution

Watch Video Solution

15. The letters of the word “RANDOM' are arranged in all possible ways. The number of arrangements in which there are 2 letters between R and D is

A. 36

B. 48

C. 144

D. 72

Answer: C

Watch Video Solution

16. The number of ways of arranging 6 players to throw the cricket ball so that oldest player may not throw first is

A. 120

B. 600

C. 720

D. 715

Answer: B

Watch Video Solution

17. The number of ways in which 5 boys and 5 girls can be arranged in a row so that

no two girls are together is

A. $2(5!)^2$

B. $5!^6P_5$

C. $5!5!$

D. $10!$

Answer: B

Watch Video Solution

18. The number of ways in which 5 boys and 5 girls can be arranged in a row so that

the number of ways in which no two boys are together is :

A. $2(5!)^2$

B. $5!^6P_5$

C. $(5!)^2$

D. $10!$

Answer: B

Watch Video Solution

19. A : the number of ways in which 5 boys and 5 girls can sit in a row so that the boys and girls sit alternatively is 28800 .

R : the number of ways in which n (first type of differernt) things and n (second type of different) things cna be arranged in a row alternatively is $2 \times n! \times n!$,

A. $2(5!)^2$

B. $5!^6P_5$

C. $(5!)^2$

D. $10!$

Answer: A

Watch Video Solution

20. The number of ways in which ten candidates $A_1, A_2, A_3, A_4, \ldots\ldots, A_{10}$ can be arranged in a row if A_1 and A_2 are next to each other is

A. $9!2!$

B. $10!$

C. $10!2!$

D. $9!$

Answer: A

Watch Video Solution

21. The number of ways in which ten candidates $A_1, A_2, A_3, A_4, \ldots\ldots, A_{10}$ can be arranged in a row if A_1 is just above A_2 then the number of ways are

A. $9!2!$

B. $10!$

C. $10!2!$

D. $9!$

Answer: D

Watch Video Solution

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

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

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

C. $9!2!$

D. $9!$

Answer: B

Watch Video Solution

23. The number of ways in which ten candidates $A_1, A_2, A_3, A_4, \ldots\ldots, A_{10}$ can be arranged in a row

If A_1 is always above A_2 and A_2 is above A_3 is

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

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

C. $8!3!$

D. $7!$

Answer: A

Watch Video Solution

24. Find the number of ways of seating 10 students $A_1, A_2 \ldots\ldots A_{10}$ in a row such that (i) A_1, A_2, A_3 sit together (ii) A_1, A_2, A_3 sit in a specified order (iii) A_1, A_2, A_3 sit together ina specified order.

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

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

C. $8!$

D. $7!$

Answer: C

Watch Video Solution

25. s_1, s_2 ....,s_{10} are the speakers in a conference, If s_1 addresses only after s_2, then the number of ways the speakers address is

A. $10!$

B. $9!$

C. $10 \times 8!$

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

Answer: D

Watch Video Solution

26. The letters of the word 'HEXAGON' are arranged in all possible ways. If the order of the vowels is not to be changed then the number of possible arrangements is

A. 1680

B. 840

C. 420

D. $\frac{8!}{2!}$

Answer: B

Watch Video Solution

27. 9 balls are to placed in 9 boxes : and 5 of the balls cannot fit into 3 small boxes the number of ways of arranging one ball in each of the boxes is

A. ${}^{6}P_{5}.4!$

B. ${}^{6}P_{5}.3!$

C. $6!3!2!$

D. $5!3!$

Answer: A

Watch Video Solution

28. The number of odd numbers having 4 digits can be formed from

A. 1680

B. ${}^{8}P_{3}$

C. ${}^{8}P_{2}$

D. ""^(9)P_(4)`

Answer: A

View Text Solution

29. Total number of four digit odd numbers that can be formed using 0, 1, 2, 3, 5, 7 are

A. 216

B. 375

C. 400

D. 192

Answer: D

Watch Video Solution

30. The number of four digit even numbers that can be formed from 0,1,2,3,7 are

A. 156

B. 300

C. 42

D. 144

Answer: C

Watch Video Solution

31. The number of positive integers which can be formed by any number of digits from 0, 1, 2, 3, 4, 5 but using each digit not more than once in each number are

A. 600

B. 1629

C. 1630

D. 601

Answer: C

Watch Video Solution

32. The number of natural numbers less than 1000, in which no two digits are repeated is

A. 738

B. 792

C. 837

D. 720

Answer: A

Watch Video Solution

33. The number of 5-digited numbers which are not divisible by 5 and which consist of different odd digits is

A. 96

B. 120

C. 24

D. 32

Answer: A

Watch Video Solution

34. The number of four-digit numbers formed by using the digits 0,2,4,5 and which are not divisible by 5, is

A. 10

B. 8

C. 6

D. 4

Answer: B

Watch Video Solution

Watch Video Solution

35. The number of four digited numbers formed by 1, 2, 5, 6, 7 divisible by 25 is

A. 42

B. 12

C. 26

D. 46

Answer: B

Watch Video Solution

36. The number of four digited numbers formed by 2, 4, 5, 7, 8 divisible by 4 is

A. 36

B. 46

C. 56

D. 66

Answer: A

Watch Video Solution

37. Five digit numbers divisible by 3 is formed using 0, 1, 2, 3, 4 and 5 without repetetion. Total number of such numbers are

A. 312

B. 3125

C. 120

D. 216

Answer: D

Watch Video Solution

38. The number of 5 digited numbers that can be formed using the digits 0, 1, 2, 3, 4, 5 that are divisible by 6 when repetition is not allowed is

A. 84

B. 148

C. 180

D. 108

Answer: D

Watch Video Solution

39. 5 digit number divisible by 9 are to be formed by using the digits 0, 1, 2, 3, 4, 7, 8 without repetition. The total number of such 5 digited numbers formed is

A. 216

B. 214

C. 212

D. 200

Answer: A

Watch Video Solution

40. Number of numbers greater than 24000 can be formed by using digits 1, 2, 3, 4, 5 when no digit being repeated is

A. 36

B. 64

C. 84

D. 112

Answer: C

Watch Video Solution

41. A letter lock consists of three rings each marked with 10 different letters. No. of ways to make an unsuccessful attempts to open the lock is

A. 899

B. 999

C. 479

D. 568

Answer: B

Watch Video Solution

42. The number of four digits telephone numbers having atleast one of their digit is repeated

A. 5040

B. 4960

C. 2520

D. 2480

Answer: B

Watch Video Solution

43. The number of quadratic expressions with the coefficients drawn from the set $\{0, 1, 2, 3\}$ is

A. 27

B. 36

C. 48

D. 64

Answer: C

Watch Video Solution

44. Number of diffferent matrices that can be formed with elements 0, 1, 2 or 3 each matrix having 4 elements is

A. $3 \times 2^4!$

B. 2×4^4

C. 3×4^4

D. 4^4

Answer: C

Watch Video Solution

45. Four dice are rolled then the number of possible out comes in which atleast one die shows 2 is

A. 1296

B. 625

C. 615

D. 671

Answer: D

Watch Video Solution

46. Find the number of numbers less than 2000 that can be formed using the digits, 1,2,3,4 if repetition is allowed.

A. 84

B. 148

C. 180

D. 1440

Answer: B

Watch Video Solution

47. The number of odd numbers lying between 40000 and 70000 that can be made from the digits 0, 1, 2, 4, 5, 7 if digits can be repeated any number of times is

A. 1125

B. 1296

C. 766

D. 655

Answer: B

Watch Video Solution

48. Total number of four digit odd numbers that can be formed using 0, 1, 2, 3, 5, 7 when repetition is allowed is

A. 216

B. 375

C. 400

D. 720

Answer: D

Watch Video Solution

49. The number of numbers greater than 1000 but not greater than can be formed with the digits 0,1,2,3,4 repetition of digits being allowed is

A. 375

B. 373

C. 374

D. 625

Answer: C

Watch Video Solution

50. Number of 5 digited numbers using 0,1,2,3,4 divisible by 4 with repetition is .

A. 800

B. 600

C. 400

D. 200

Answer: A

Watch Video Solution

51. Find the number of 4- digit numbers that can be formed using the digits 1,2,3,4,5,6 that are divisible by (i) 2 (ii) 3 when repetition is allowed.

A. 234

B. 334

C. 432

D. 532

Answer: C

Watch Video Solution

52. Number of 4 digited numbers using 0, 1, 2, 3, 4, 5 divisible by 6 with repetition is

A. 90

B. 100

C. 140

D. 180

Answer: D

Watch Video Solution

53. The number of 5 digited numbers that contain 7 exactly once is

A. $41(9^3)$

B. $37(9^3)$

C. $7(9^4)$

D. $41(9^4)$

Answer: A

Watch Video Solution

54. Number of different 6 digit numbers whose sum of digits to be odd is (repetitions are allowed)

A. 45×10^4

B. 45

C. 45×10^3

D. 10^3

Answer: A

Watch Video Solution

55. The number of 5 letter words formed using the letters of DELHI begin and end with consonant with repetition is

A. 1125

B. 400

C. 300

D. 200

Answer: A

Watch Video Solution

56. Number of bijections from Set-A containing n elements onto itself is 720 then n is

A. 5

B. 6

C. 4

D. 7

Answer: B

Watch Video Solution

57. Number of Surjections from Set - A containing n elements to the Set -B containing 2 elements is 30 then n is

A. 3

B. 4

C. 5

D. 6

Answer: C

Watch Video Solution

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

A. ${}^{10}P_5$

B. ${}^{10}C_5$

C. 5^{10}

D. 10^5

Answer: C

Watch Video Solution

59. The number of ways of wearing 6 different rings to 5 hands is

A. 5^6

B. 5^5

C. 2^6

D. 2^5

Answer: A

Watch Video Solution

60. There are 3 candidates for a lecturership and one is to be selected by the votes of seven men. The number of ways can the votes be given is

A. 7^3

B. 3^7

C. ${}^7P_3$

D. $7!$

Answer: B

Watch Video Solution

61. Number of ways in which 4 prizes can be distributed among 5 students if no student gets more than one prize is

A. 5^4

B. ${}^5P_4$

C. 4^5

D. 620

Answer: B

Watch Video Solution

62. If a student is eligible for all the prizes is

A. 625

B. 620

C. 1024

D. 1020

Answer: A

View Text Solution

63. number of ways in which 4 prizes can be distributed among 5 students If no student gets all the prizes is

A. 625

B. 620

C. 1024

D. 1020

Answer: B

Watch Video Solution

64. In an examination there are there are three multiple choice questions and each question has 4 choices Number of sequences in which a student can fail to get all answer correct is

A. 11

B. 12

C. 27

D. 63

Answer: D

Watch Video Solution

65. In a library, there are 6 copies of one book, 4 copies each of two different books, 5 copies each of three different books and 3 copies each of two different books. Find the number of ways of arranging all these books in a shelf in a single row.

A. $\dfrac{40!}{(2!)^4(3!)^6}$

B. $\dfrac{40!}{6!.\,(4!)^2(6!)^3}$

C. $\dfrac{40!}{6!.4!.6!}$

D. $\dfrac{40!}{6!.(4!)^3.(6!)^2}$

Answer: B

Watch Video Solution

66. The number of ways in which the letters of 'ARRANGE' be arranged so that

No two R's come together is

A. 120

B. 900

C. 240

D. 360

Answer: B

Watch Video Solution

67. The number of ways in which the letters of ‘ARRANGE' be arranged so that

Two R's come together is

A. 120

B. 900

C. 240

D. 360

Answer: D

Watch Video Solution

68. The number of ways in which the letters of 'ARRANGE' be arranged so that

Two R's come together is

A. 120

B. 900

C. 240

D. 360

Answer: A

Watch Video Solution

69. The number of ways in which the letters of 'ARRANGE' be arranged so that

Two R's come together is

A. 120

B. 900

C. 240

D. 360

Answer: C

Watch Video Solution

70. The number of ways in which the letters of the word 'PROPORTION' be arranged without changing the relative positions of vowels and consonants is

A. $\frac{6!}{2!2!}\frac{5!}{4!}$

B. $\frac{6!4!}{2!2!3!}$

C. $\frac{10!}{3!2!2!3!}$

D. $\frac{10!}{3!2!2!}$

Answer: B

Watch Video Solution

71. The number of numbers greater than 50,000 that can be formed by using the digits 5, 6, 6, 7, 9 is

A. 36

B. 48

C. 54

D. 60

Answer: D

Watch Video Solution

72. The number of different nine digit numbers can be formed from the number 223355888 by rearranging its digits so that the odd digits occupy even position is

A. 16

B. 36

C. 60

D. 180

Answer: C

Watch Video Solution

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

A. 24

B. 18

C. 12

D. 30

Answer: B

Watch Video Solution

74. The total number of ways in which six '+' and four '-' sign be arranged in a line such that no two - signs occur together is

A. 35

B. 70

C. $6! \times 4!$

D. 24

Answer: A

Watch Video Solution

75. There are (n+1) white similar balls and (n+1) black balls of different size. No. of ways the balls can be arranged in a row so that adjacent balls are of different colours is

A. $[(n+1)!]^2$

B. $2[(2n)!]$

C. $2[(n+1)!]$

D. $2[(n+1)!]^2$

Answer: C

Watch Video Solution

76. Number of circular permutations of 15 things taken 5 at a time in one direction is

A. $\frac{{}^{15}P_5}{5}$

B. $\frac{15!}{2}$

C. $\frac{15!}{5}$

D. $\frac{{}^{15}P_5}{10}$

Answer: A

Watch Video Solution

77. The number of ways in which 5 boy and 4 girls sit around a circular table so that no two girls sit together is

A. $5!4!$

B. $5!3!$

C. $5!$

D. $4!$

Answer: A

Watch Video Solution

78. Find the number of ways of arranging 8 men and 4 women around a circular table. In how many of them

no two women come together

A. $8!$

B. $4!$

C. $8!4!$

D. $7!.\,{}^{8}P_{4}$

Answer: D

Watch Video Solution

79. Number of ways in which 6 ladies and 6 gentlemen be seated at a round table, the ladies and gentlemen being seated alternatively is

A. $5!6!$

B. $3!5!$

C. $5!7!$

D. $7!9!$

Answer: A

Watch Video Solution

80. The number of ways of arranging 9 persons around a circle if there are two other persons between two particular persons is

A. $2 \times (7!)$

B. $3 \times 7!$

C. $9 \times {}^{8}P_2$

D. $4 \times 7!$

Answer: A

Watch Video Solution

81. The number of ways in which 6 gentlemen and 3 ladies be seated round a table so that every gentlemen may have a lady by his side is

A. 1440

B. 720

C. 240

D. 480

Answer: A

Watch Video Solution

82. 20 persons are invited for a party . The different number of ways in which they can be seated on a circular table with particular persons seated on either side of the host is

A. $20!$

B. $2!19!$

C. $2!18!$

D. $18!$

Answer: C

Watch Video Solution

83. The number of ways in which 7 red roses and 4 white roses of different sizes can be made out to form a garland so that all the white roses come together is

A. $6!^{7}P_{4}$

B. $6!^{8}P_{4}$

C. $\frac{7!4!}{2}$

D. $\frac{6!^{8}P_{4}}{2}$

Answer: C

Watch Video Solution

84. Garlands are formed using 6 red roses and 6 yellow roses of different sizes. The number of arrangements in garland which have red roses and yellow roses come alternately is

A. $5! \times 6!$

B. $6! \times 6!$

C. $\frac{5!}{2!} \times 6!$

D. $2(6! \times 6!)$

Answer: C

Watch Video Solution

85. The number of ways in which n things of which r are alike, can be arranged in a circular order, is

A. $\dfrac{(n-1)!}{r!}$

B. $\dfrac{n!}{r!}$

C. $\dfrac{n!}{(r-1)!}$

D. $\dfrac{(n-1)!}{(r-1)!}$

Answer: A

Watch Video Solution

86. There are n white and n black balls market 1,2,3 . . . N the number of ways in which we can arrange these balls in a row so that neighboring balls are of different colours is

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

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

C. $\dfrac{1}{2}.\ {}^{n}P_{m}$

D. ${}^{n-1}P_m$

Answer: A

Watch Video Solution

87. The number of ways that the Chief minister and the 14 ministers of our state can sit around table for a conference so that the chief minister can occupy the fixed seat is

A. $13!$

B. $14!$

C. $\dfrac{14!}{2}$

D. $15!$

Answer: B

Watch Video Solution

88. If the letters of the word SACHIN are arranged in all possible ways and these words are written out as in dictoionary, then the word SACHIN appers at serial number is

A. 601

B. 600

C. 603

D. 602

Answer: A

Watch Video Solution

89. The letters of the word 'VICTORY' are arranged in all possible ways, and the words thus obtained are arranged as in a dictionary. Then the rank of given word is

A. 3733

B. 5309

C. 5040

D. 3732

Answer: A

Watch Video Solution

90. The letters of the word LABOUR are permuted in all possible ways and the words thus formed are arranged as in a dictionary then the rank of the given word is

A. 262

B. 261

C. 309

D. 242

Answer: D

Watch Video Solution

91. If the letters of the word 'NAAGI' are arranged as in a dictionary then the rank of the given word is

A. 23

B. 84

C. 49

D. 48

Answer: C

Watch Video Solution

Watch Video Solution

92. If all permutations of the letters of the word AGAIN are arranged as in dictionary . Then fifieth words is

A. NAAGI

B. NAAIG

C. NAGAI

D. NAIAG

Answer: A

Watch Video Solution

93. If the letters of the word 'PAPER' are arranged as in a dictionary then the rank of the given word is

A. 27

B. 18

C. 32

D. 11

Answer: A

Watch Video Solution

94. All the numbers that can be formed using all the digits at a time from 35179 are arranged in the increasing order of magnitude. The rank of the number 35179 is

A. 25

B. 31

C. 65

D. 131

Answer: B

Watch Video Solution

95. All the numbers that can be formed using 1, 2, 3, 4, 5 are arranged in the decreasing order. Rank of 35241 is

A. 51

B. 35

C. 24

D. 16

Answer: A

Watch Video Solution

96. Four digit numbers formed with 1, 2, 4, 6, 8 without repetition are formed in ascending order. Then the rank of 4618 is

A. 31

B. 62

C. 124

D. 248

Answer: B

Watch Video Solution

97. The sum of the digits in the unit place of all the numbers formed with the help of 3,4,5,6 taken all at a time is

A. 432

B. 108

C. 36

D. 18

Answer: B

Watch Video Solution

98. The sum of the numbers formed by taking all the digits at a time from 0, 2, 3, 4 is

A. 57996

B. 756993

C. 99657

D. 57699

Answer: A

View Text Solution

99. Sum of four digit numbers formed with 2,3,4,5 using each digit any number of times is

A. $4 \times 1111 \times 64$

B. $14 \times 1111 \times 64$

C. $14 \times 1111 \times 16$

D. $4 \times 1111 \times 64$

Answer: B

Watch Video Solution

100. Find the sum of all 4 digited numbers that can be formed using the digits 1,2,4,5,6 without repetition.

A. 4799522

B. 497952

C. 545958

D. 547598

Answer: A

Watch Video Solution

101. Find the sum of all 4 digited numbers that can be formed using the digits 0,2,4,7,8 without repetition.

A. 5459582

B. 685784

C. 895452

D. 547598

Answer: A

Watch Video Solution

102. The sum of the digits in the unit place of all the numbers formed with the help of 3,4,5,6 taken all at a time is

A. 432

B. 108

C. 36

D. 18

Answer: B

Watch Video Solution

103. $f: A \to A, A = \{a_1, a_2, a_3, a_4, a_5\}$, the number of one one functions so that $f(x_i) \neq x_1, x_i \in A$ is

A. 44

B. 88

C. 22

D. 20

Answer: A

Watch Video Solution

104. The number of ways in which 4 letters can be put in 4 addressed envelopes so that

I: atleast one letter goes into wrong envelope is 23.

II : no letter goes into the envelope meant for it is 9.

III : all the letters goes into the right addressed envelopes is 24.

Which of the above statements is true

A. only I is true

B. only III is true

C. both I and II are true

D. II & III are true

Answer: C

View Text Solution

105. If the 4 letter words formed by using the letters of the word EQUATION, a, b, c are respectively the number of words begin with an vowel, begin and end with vowels, end with a consonent then the descending order of a, b, c is

A. a,b,c

B. b,c, a

C. c, b, a

D. a, c, b

Answer: D

Watch Video Solution

106. Assertion (A): The number of ways in which 5 boys and 5 girls can sit in a row so that all the girls sit together is 86400.

Reason (R) : The number of ways in which m (first type of different) things and n (second type of different) things can be arranged in a row so that all the second type of things come together is $n!^{(n+1)}P_m$ The correct answer is

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: C

Watch Video Solution

107. Assertion (A) : The number of ways in which 6 persons can sit around a round table is 120. Reason (R) : The number of circular permutaions of n different things taken all at a time in one direction is $\dfrac{(n-1)!}{2}$ The correct answer is

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: B

View Text Solution

108. $\sum_{r=0}^{n} \frac{P_r}{r!}$ is equal to

A. 2^{n-1}

B. 2^n

C. $2^n + 1$

D. 2^{n-1}

Answer: B

Watch Video Solution

109. If ${}^{n}P_{r} = {}^{n}P_{(r+1)}$ and ${}^{n}C_{r} = {}^{n}C_{r-1}$, then (n,r) =

A. (8,9)

B. (6,7)

C. (4,5)

D. (3,2)

Answer: D

Watch Video Solution

110. IF ${}^{n}P_{r} = 720, {}^{n}C_{r} = 120$then (n, r)=

A. (7,4)

B. (6,2)

C. (8,4)

D. (10,3)

Answer: D

Watch Video Solution

111. ${}^{2n}C_{n+1} + 2. {}^{2n}C_{n} + {}^{2n}C_{n-1}$=

A. ${}^{(2n+2)}C_{n+1}$

B. ${}^{(n+1)}C_{n+1}$

C. ${}^{n}C_{n}$

D. ${}^{(2n+1)}C_n$

Answer: A

Watch Video Solution

112. the value of ${}^{50}C_4 + \sum_{r=1}^{6} {}^{56-r}C_3$ is

A. ${}^{55}C_4$

B. ${}^{55}C_3$

C. ${}^{56}C_3$

D. ${}^{56}C_4$

Answer: D

Watch Video Solution

113. $\sum_{r=0}^{10}(40-r)C_5 =$

A. ${}^{41}C_5 - {}^{30}C_5$

B. ${}^{41}C_6 - {}^{30}C_6$

C. ${}^{41}C_5 + {}^{30}C_5$

D. ${}^{41}C_6$

Answer: B

Watch Video Solution

114. If ${}^{n-1}C_3 + {}^{n-1}C_4 > {}^{n}C_3$, then

A. $n > 5$

B. $n > 6$

C. $n > 7$

D. $n > 8$

Answer: C

Watch Video Solution

115. If ${}^{n}C_{4}, {}^{n}C_{5}, {}^{n}C_{6}$ are in A.P., then the value of n is

A. 11

B. 17

C. 8

D. 14 or 7

Answer: D

Watch Video Solution

116. If ${}^{n}C_{r-1} = 36$, ${}^{n}C_{r} = 84$ and ${}^{n}C_{r+1} = 126$, then r is equal to

A. 1

B. 2

C. 3

D. 4

Answer: C

Watch Video Solution

117. The value of $2^{n} n!(1.3.5.\ldots.(2n-1))$ is

A. $(2n)!$

B. $(4n)!$

C. $\dfrac{(2n)!}{n}$

D. $n!$

Answer: A

Watch Video Solution

118. If $a_n = \sum_{r=0}^{n} \frac{1}{^nC_r}$ then $\sum_{r=0}^{n} \frac{r}{^nC_r}$ equal to

A. $^{(n-1)} a_0$

B. $n.\ a_n$

C. $\frac{1}{2} n.\ a_n$

D. a_{n+1}

Answer: C

Watch Video Solution

119. ${}^{n}C_{r} + 4.\,{}^{n}C_{r-1} + 6.\,{}^{n}C_{r-2} + 4.\,{}^{n}C_{r-3} + {}^{n}C_{r-4}$ is equal to

A. ${}^{n+4}C_{r}$

B. $2.\,{}^{n+4}C_{r-1}$

C. ${}^{n}C_{r}$

D. $11.\,{}^{n}C_{r}$

Answer: A

Watch Video Solution

120. The sum $\sum_{i=0}^{m}\left(\frac{10}{i}\right)\left(\frac{20}{m-i}\right)$ is maximum when m is

A. 5

B. 10

C. 15

D. 20

Answer: C

View Text Solution

121. In a football championship there were played 153 matches. Every two teams played one match with each other. The number of teams, participating in the championship is

A. 14

B. 22

C. 18

D. 9

Answer: C

Watch Video Solution

122. From a group of persons the number of ways of selecting 5 persons is equal to that of 8 persons. No. of ways of selecting 2 persons is

A. 78

B. 92

C. 89

D. 41

Answer: A

Watch Video Solution

123. In a chess tournament where the participants were to play one game with another, two players fell ill having played 3 games each. If the total number of games played is 84, the number of participants at the beginning was

A. 13

B. 14

C. 15

D. 10

Answer: C

Watch Video Solution

124. A teacher takes 3 children from her class to the zoo at a time as often as she can, but she does not take the same three children to the zoo more than once. She finds that the number of times she goes to the zoo is 84 more than a particular child goes to the zoo. Number of children in her class is

A. 12

B. 10

C. 60

D. 40

Answer: B

View Text Solution

125. From 0 to 9, four digited numbers can be formed such that the digits are in ascending order is

A. ${}^{10}P_4$

B. ${}^{10}C_4$

C. ${}^{10}P_4 - {}^{9}P_3$

D. ${}^{10}C_4 - {}^{9}C_3$

Answer: D

Watch Video Solution

126. The total number of 4 digit numbers in which the digits are in descending order is

A. ${}^{10}C_4 \times 4!$

B. ${}^{10}C_4$

C. $\frac{10!}{4!}$

D. 1200

Answer: B

Watch Video Solution

127. 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

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

128. 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. ${}^{30}C_4 - 20$

B. ${}^{30}C_4 - 22$

C. ${}^{30}C_4 - 27$

D. ${}^{30}C_4 - 1$

Answer: C

Watch Video Solution

129. The number of ways in which 4 vowels and 2 consonants be chosen from EQUATION is

A. 60

B. 30

C. 15

D. 10

Answer: C

Watch Video Solution

130. The number of ways in which 5 players be chosen from 12 players so as to include one particular player is

A. ${}^{12}C_4$

B. ${}^{11}C_5$

C. ${}^{12}C_5$

D. ${}^{11}C_4$

Answer: D

Watch Video Solution

131. The number of ways in which a team of eleven players can be selected from 22 players always including 2 of them and excluding 4 of them is

A. ${}^{16}C_{11}$

B. $(16)C_5$

C. ${}^{16}C_9$

D. ${}^{20}C_9$

Answer: C

Watch Video Solution

132. Acommittee of 12 members is to formed from 9 women and 8 men . The number of committee in which the women are in majority is

A. 2720

B. 2702

C. 2270

D. 2278

Answer: B

Watch Video Solution

133. A cricket 11 is to be selected out of 14 players of whom 5 are bowlers . The number of ways in which this can be done so as to include atleast 3 bowlers is

A. 945

B. 885

C. 630

D. 715

Answer: C

Watch Video Solution

134. The number of ways an international committee of 4 be formed out of 6 Indians, 4 Pakistanis and 3 Srilankas, if the committee to have atleast one from each of the countries is

A. 360

B. 335

C. 425

D. 423

Answer: A

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135. A student has to answer 10 out of 13 questions in an examination choosing at least 5 question from the first 6 questions. The number of choices available to the students is

A. 161

B. 91

C. 63

D. 196

Answer: A

Watch Video Solution

136. A box contains 2 white balls, 3 black balls and 4 red balls. The number of ways can 3 balls be drawn from the box if atleast one black ball is to be included in the draw is

A. 64

B. 56

C. 46

D. 44

Answer: A

Watch Video Solution

137. 12 persons are to be arranged to a round table . If two particular persons among them are not to be side by side then the the total number of arrangements is

A. 10

B. 11

C. 54

D. 48

Answer: C

Watch Video Solution

138. The number of ways in which 7 pencils, 6 books and 5 pens be disposed off is

A. 336

B. 334

C. 335

D. 210

Answer: C

Watch Video Solution

Watch Video Solution

139. A double decker bus can accomodate 75 passengers 35 in the lower deck 40 in the upper deck. The number of ways the passengers can be accomodated if 5 want to sit only in lower deck and 8 want to sit only in upper deck is

A. ${}^{62}C_{27}$

B. ${}^{62}C_{35}$

C. ${}^{62}C_{30}$

D. ${}^{75}C_{40}$

Answer: C

View Text Solution

140. There are two cars of which one holds not more than 5 and the other not more than 4. The number of ways can a party of 8 people go for excursion in the two cars is

A. 8400

B. 126

C. 124

D. 6400

Answer: B

Watch Video Solution

141. The crew of an 8 oar boat is to be choosen from 12 men of whom 3 can row always on the stroke side only. The number of ways in which the crew can be arranged is

A. ${}^{9}C_{4}.\,{}^{8}C_{4}$

B. ${}^{12}C_{4}.\,{}^{9}C_{4}.4!4!$

C. ${}^{9}C_{4}.\,{}^{8}C_{4}.4!4!$

D. ${}^{12}C_{4}.\,{}^{8}C_{1}.4!4!$

Answer: C

Watch Video Solution

142. A boat is to be manned by 9 crew with 4 on the stroke side, 4 on the row side and one to steer. There are 11 men of which 2 can stroke only and 1 can row only while 3 can steer only. The number of ways the crew can be arranged for the boat is

A. 10

B. 30

C. 44

D. 17280

Answer: D

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143. A regular polygon of n sides has170 digonals . Then n=

A. 20

B. 17

C. 12

D. 25

Answer: A

Watch Video Solution

144. The number of diagonals of a regular polygon Then the number of sides of the polygon is

A. 12

B. 9

C. 10

D. 11

Answer: C

View Text Solution

145. The number of sides of a polygon which has diagonals and its sides same are

A. 6

B. 5

C. 7

D. 3

Answer: B

View Text Solution

146. The polygon in which no. of diagonals is twice the no. of sides is

A. Hexagon

B. Heptagon (or) Septagon

C. Octagon

D. Decagon

Answer: B

View Text Solution

147. The number of lines that can be formed from 12 points in a plane of which 6 points lie on a line is

A. 2

B. 52

C. 50

D. 46

Answer: B

Watch Video Solution

148. In a plane there are 10 points, no three are in same straight line except 4 points which are collinear, then the number of straight lines are

A. 39

B. 41

C. 45

D. 40

Answer: D

Watch Video Solution

149. In a plane there are 10 points, no three are in same straight line except 4 points which are collinear, then the number of triangles formed are

A. 120

B. 20

C. 116

D. 119

Answer: C

Watch Video Solution

150. Let L_1 and L_2 be two lines intersecting at P. If A_1, B_1, C_1 are points on $L_1, A_2, B_2, C_2, D_2, E_2$ are points on L_2 and if none of these coincides with P, then the number of triangles formed by these 8 points is

A. 56

B. 55

C. 46

D. 45

Answer: D

Watch Video Solution

151. The sides AB,BC,CA of a Δ ABC have 3,4and 5 interior points respectively on them . The number of triangles that can be sonstructed using these points as vertices is

A. 205

B. 210

C. 315

D. 216

Answer: A

Watch Video Solution

152. Suppose t_n is the number of triangles formed using the vertices of a regular polygon of n sides. If $t_{n+1} = t_n + 28$ then n=

A. 11

B. 9

C. 8

D. 7

Answer: C

Watch Video Solution

153. IF T_n dentoes the number of triangle formed with n points in plane no three of which are collinear and If $T_{n+1} - T_n = 36$ then n=

A. 7

B. 8

C. 9

D. 10

Answer: C

Watch Video Solution

154. T_m denotes the number of triangles that can be formed with the vertices of a regular polygon of m sides . If $T_{m+1} - T_m = 15$ then m=

A. 3

B. 6

C. 9

D. 12

Answer: B

Watch Video Solution

155. There are two parallel lines, one having 10 points and the other having 5 points. The number of triangles formed with vertices as these points is

A. 225

B. 100

C. 325

D. 125

Answer: C

View Text Solution

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

A. 2

B. 3

C. 4

D. 5

Answer: D

Watch Video Solution

157. A regular polygon of n sides is constructed. No. of ways 3 vertices be selected so that no two vertices are consecutive is

A. ${}^{n}C_{3} - n.\ (n - 4)$

B. ${}^{n}C_{3} - n - n(n - 4)$

C. ${}^{n}C_{3} + n - n(n - 4)$

D. ${}^{n}C_{3} - n.\ n.\ \left({}^{(n-4)}C_{2}\right)$

Answer: B

Watch Video Solution

158. The number of triangle whose vertices are at the vertices of an octagon but none of whose sides happen to come from the sides of the octagon is

A. 24

B. 52

C. 48

D. 16

Answer: D

Watch Video Solution

159. The maximum number of points of intersection of 8 circles is

A. 16

B. 24

C. 28

D. 56

Answer: D

Watch Video Solution

160. The maximum number of points of intersection of 4 circles and 4 straight lines is

A. 25

B. 50

C. 56

D. 72

Answer: B

View Text Solution

161. A regular polygon has 23 vertices and consequently 23 sides. The number of additional lines need be drawn so that every pair of vertices will be connected is

A. 253

B. 230

C. 256

D. 276

Answer: B

Watch Video Solution

162. Number of ways of selecting two squares having common side in a chess board is (1 unit size squares)

A. 112

B. 124

C. 64

D. 80

Answer: A

Watch Video Solution

163. Number of unit squares in a chess board is

A. 204

B. 220

C. 242

D. 300

Answer: A

Watch Video Solution

164. In a plane there are two families of lines y = x+c, y=-x+c where ce{0, 1, 2, 3, 4} the number of squares of diagonals of length 2 units formed by the lines is

A. 25

B. 16

C. 9

D. 3

Answer: C

View Text Solution

165. In a book-stall, there are 4 copies of one book, 5 copies of another and single copy of 5 other different books. Then the no. of ways that a person can purchase one or more books is

A. 340

B. 535

C. 959

D. 1002

Answer: C

Watch Video Solution

166. the number of products that can be formed with 10 prime numbers taking two or more at a time is

A. 2^{10}

B. $2^{10} - 1$

C. $2^{10} - 11$

D. $2^{10} - 10$

Answer: C

Watch Video Solution

167. In the intermediate examination a candidate has to pass in each of his 6 papers . The number of ways in within he can fail is

A. 32

B. 31

C. 64

D. 63

Answer: D

Watch Video Solution

168. There are 10 lamps in a hall. Each one of them can be switched on independently. No. of ways in which the hall can be illuminated is

A. $2^{10} - 1$

B. $2^{9} - 1$

C. 2^{10}

D. 2^{9}

Answer: A

Watch Video Solution

169. A question paper has 5 questions. Each question has an alternative. The number of ways in which a student can attempt atleast one question is

A. $2^5 - 1$

B. $3^5 - 1$

C. $3^4 - 1$

D. $2^4 - 1$

Answer: B

Watch Video Solution

170. Given 5 different green dyes, 4 different blue dyes, 3 different red dyes. The number of combinations of dyes atleast one green and one blue dye is

A. 3870

B. $(2^5 - 1)(2^4 - 1)(2^3 - 1)$

C. $(2^5 - 1)(2^5 - 1)2^3.12!$

D. 3720

Answer: D

Watch Video Solution

171. For any integer $n \geq 1$, the number of positive divisors of n is denoted by dựn). Then for a prime p, $d\left(d\left(d\left(p^7\right)\right)\right)$ is

A. 1

B. 2

C. 3

D. p

Answer: C

Watch Video Solution

172. Number of non-trivial divisors of 1512 is

A. 10

B. 20

C. 30

D. 40

Answer: C

Watch Video Solution

173. Number of even divisors of 1600 is

A. 21

B. 18

C. 3

D. 6

Answer: B

Watch Video Solution

174. If N denotes the set of all positive integers and if : $N \rightarrow N$ is defined by f(n)= the sum of positive divisors of n, then $f\left(2^{k}.3\right)$, where k is a positive integer, is

A. $2^{k+1}-1$

B. $2\left(2^{k+1}-1\right)$

C. $3\left(2^{k+1}-1\right)$

D. $4\left(2^{k+1}-1\right)$

Answer: D

Watch Video Solution

175. The sum of the even divisors of 168 is

A. 448

B. 460

C. 42

D. 122

Answer: A

Watch Video Solution

176. Number of odd proper divisors of $3^p.6^m.21^n$ is

A. $(p+m+n+1)(n+1)-1$

B. $(p+m+n+1)(n+1)$

C. $(p+m+n)(n+1)$

D. $(p+m+n)(n-1)$

Answer: A

Watch Video Solution

177. The number of ways in which 1800 can be divided into two factors is

A. 17

B. 18

C. 36

D. 34

Answer: B

Watch Video Solution

Watch Video Solution

178. The number of ways in which 900 can be resolved as a product of two factors is

A. 13

B. 14

C. 28

D. 30

Answer: B

Watch Video Solution

179. The number of subsets of {1,2,3,. . . .9} conatining at least one odd number is :

A. 324

B. 396

C. 512

D. 496

Answer: D

Watch Video Solution

180. At an election, a voter may vote for any number of candidates, not greater than the number to be elected. There are 10 candidates and 4 are to be elected. If a voter votes for at least one candidate, then the number of ways in which he can vote is

A. 5040

B. 6210

C. 385

D. 1110

Answer: C

Watch Video Solution

181. In a club 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, then the number of candidates is

A. 5

B. 6

C. 7

D. 8

Answer: B

View Text Solution

182. The number of all three element subsets of set $\{a_1, a_2, a_3, \ldots\ldots, a_n\}$ which contain a_3 is

A. ${}^{n}C_3$

B. ${}^{n+1}C_3$

C. ${}^{n-1}C_2$

D. 2^n

Answer: C

Watch Video Solution

183. If 20% of three element subsets of the set $\{a_1, a_2, a_3, \ldots\ldots, a_n\}$ are three element subsets with an element a_1, then n is

A. 15

B. 16

C. 17

D. 18

Answer: A

Watch Video Solution

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

A. 2n

B. n^2

C. 2^{n^2}

D. 2^{2n}

Answer: D

Watch Video Solution

185. A student is allowed to select atmost 'n' books from a collection of (2n + 1) books. If the total no. of ways in which he can select one or more books is 63, then n is

A. 1

B. 2

C. 3

D. 4

Answer: C

View Text Solution

186. There are 2n things out of which 'n' are alike and 'n' are different, the number of ways of selecting 'n' things is

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

B. $2^n - 1$

C. 2^n

D. n

Answer: C

View Text Solution

187. At an election 3 wards of a town are canvassed by 2, 3, 4 men respectively. The number of ways in which 12 men volunteers can be allotted to different wards is

A. ${}^{12}C_9 \frac{9!}{2!3!4!}$

B. ${}^{12}C_9 \frac{9!}{3!4!}$

C. ${}^{12}C_9 \frac{9!}{(3!)^4}$

D. ${}^{12}C_9 \frac{9!}{(3!)^3}$

Answer: A

Watch Video Solution

188. The set S={1,2,3....12} is to be partitioned into three sets A,BC of equal size Thus

$A \cup B \cup C = S, A \cap B = B \cap C = A \cap C = \varphi$ the number of ways to partitions S is

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

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

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

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

Answer: A

Watch Video Solution

189. Total number of ways in which "2n' persons can be divided into 'n' couples is

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

B. $\frac{(2n)!}{n!(2!)^n}$

C. $\frac{(2n)!}{n(2!)}$

D. $\frac{(2n)!}{n}$

Answer: B

Watch Video Solution

190. The number of ways of dividing 15 men and 15 women into 15 couples each consisting a man and a woman is

A. $15!$

B. 1840

C. 1820

D. 2005

Answer: A

Watch Video Solution

Watch Video Solution

191. The number of ways can a collection of 30 books be divided into two groups of 10 and 20 so that the first group always contains a particular book is

A. ${}^{29}C_{29}$

B. ${}^{29}C_{20}$

C. ${}^{29}C_{10}$

D. ${}^{29}C_{9} \times {}^{29}C_{20}$

Answer: B

Watch Video Solution

192. The number of ways that 7 objects can be divided into 4 sets 3 of them having 2 and fourth having only 1

A. 105

B. 106

C. 210

D. 211

Answer: A

Watch Video Solution

193. The number of ways that 30 mangoes can be distributed among 5 boys if each boy is eligible for any number of mangoes is

A. ${}^{34}C_4$

B. ${}^{35}C_4$

C. ${}^{36}C_4$

D. ${}^{33}C_4$

Answer: A

Watch Video Solution

194. The number of ways of distributing 8 indentical balls in 3 distinct boxes so that none of the boxes empty is

A. 5

B. ${}^8C_3$

C. 3^8

D. 21

Answer: D

Watch Video Solution

195. Number of ways in which 12 identical balls can be put in 5 different boxes in a row, if no box remains empty is

A. $^{10}C_4$

B. $^{11}C_4$

C. $^{12}C)_4$

D. $^{9}C_4$

Answer: C

View Text Solution

196. The number of ways of selecting 10 balls out of an unlimited number of white , red green and blue balls is

A. 236

B. 256

C. 276

D. 286

Answer: D

Watch Video Solution

197. If n is a natural number, then the number of non-negative integral solutions of x+y+z=n is

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

B. $\dfrac{(n+1)(n+2)}{2}$

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

D. $\dfrac{n(n-1)}{3}$

Answer: B

View Text Solution

198. Number of ways in which 3 sovereings be given away to 4 applicants and any applicant may have either 0, 1, 2 and 3 sovereings is

A. 18

B. 16

C. 19

D. 20

Answer: D

Watch Video Solution

199. There are 14 Railway stations along a line. Number of ways of selecting 3 stations out of them to stop the train such that no two stops are adjacent is

A. 120

B. 220

C. 320

D. 420

Answer: B

View Text Solution

200. The number of ways in which an examiner can assign 30 marks to 8 questions given not less than 2 marks to any question is

A. ${}^{21}C_7$

B. ${}^{20}C_7$

C. ${}^{30}C_8$

D. 1412

Answer: A

View Text Solution

201. Number of ways in which Rs. 18 can be distributed amongst four persons such that no body receives less than Rs. 3 is

A. 42

B. 24

C. $4!$

D. 84

Answer: D

Watch Video Solution

202. Number of ways of allotting 30 marks to 10 questions so that each question to get atleast two marks is

A. ${}^{19}C_6$

B. ${}^{19}C_{10}$

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

D. ${}^{30}C_{15}$

Answer: C

View Text Solution

203. Total number of ways of selecting six coins out of 20 one rupee coins, 10 fifty paise coins and 7 twenty five paise coins only is

A. ${}^{8}C_6$

B. ${}^{12}C_6$

C. ${}^{24}C_6$

D. ${}^{32}C_6$

Answer: A

Watch Video Solution

204. In the prime factorization of $37! = 2^{\alpha_2}.3^{\alpha_3}.5^{\alpha_5}.........37^{\alpha_{37}}$ the ratio $\alpha_3 : \alpha_5$=

A. $3:5$

B. $17:8$

C. $5:3$

D. $8:21$

Answer: B

View Text Solution

205. If there are 5 perids in each working day of a school , then the number of ways that you can arrage 4 subjects during the working day is

A. 125

B. 180

C. 220

D. 240

Answer: D

Watch Video Solution

206. Total number of 6 digited numbers in which all the odd digits and only odd digits appear is

A. $\frac{5}{2}\angle 6$

B. $\angle 6$

C. $\frac{1}{2}\angle 6$

D. $\frac{5}{2}\angle 5$

Answer: A

Watch Video Solution

207. The number of four letter words can be formed from the letters of the word INFINITY so that 3 are alike, one is different is

A. ${}^{8}C_{4}$

B. 4

C. 16

D. 8

Answer: C

View Text Solution

208. The number of ways in which a mixed double game can be arranged from amongst 9 married couples if no husband and wife play in the same game is

A. 1512

B. 3024

C. $9!$

D. 216

Answer: A

Watch Video Solution

209. 5 balls of different colours are to be placed in 3 boxes of different sizes. Each box can hold all 5 balls. No. of different ways the balls can be placed so that no box remain empty is

A. 50

B. 150

C. 300

D. 350

Answer: B

View Text Solution

210. The number of words which can be formed out of letters a, b, c, d, e, f taken 3 together, each containing one vowel atleast is

A. ${}^4P_1 . {}^4P_2$

B. 96

C. ${}^6P_3$

D. 120

Answer: B

Watch Video Solution

211. A three digit number n is such that the last two digits of it are equal and different from the first , the number of such n's is

A. 64

B. 72

C. 81

D. 900

Answer: C

Watch Video Solution

212. The number of 3 digited numbers "abc' such that $b < c$ is

A. 450

B. 405

C. 400

D. 410

Answer: B

Watch Video Solution

213. A box contains 5 pairs of shoes. If 4 shoes are selected, then the number of ways in which exactly one pair of shoes obtained is

A. 120

B. 140

C. 160

D. 180

Answer: A

Watch Video Solution

Watch Video Solution

214. Number of ways of seating 20 persons at two round tables. Seating 10 to each table is

A. $\frac{20!}{100}$

B. $\frac{20!}{81}$

C. $\frac{20!}{10}$

D. $\frac{20!}{9}$

Answer: A

Watch Video Solution

215. A binary sequence is an array of '0' s and 1's . The number of n- digit binary sequences which contain even number of 0 s is :

A. 2^{n-1}

B. $2^{n}-1$

C. $2^{n-1}-1$

D. 2^{n}

Answer: A

Watch Video Solution

216. A guard of 12 men is formed a group of n soldiers . It is found that 2 particular solders A and B are 3 times as often together on guard as 3 particular solders C,D,& E. Then n=

A. 31

B. 32

C. 41

D. 42

Answer: B

Watch Video Solution

217. In a polygon, no three diagonals are con current. If the total no. of point of intersection of diagonals in polygon is 70, then number of diagonals of polygon is

A. 4

B. 20

C. 12

D. 16

Answer: B

View Text Solution

218. A is a set containing n elements. A subset P of A is chosen. The set A is reconstructed by replacing the elements of P. A subset of A is again chosen.

i) The number of ways of choosing P and Q so that $P \cap Q = \phi$ is

A. 2^n

B. 2^{2n}

C. 3^n

D. 3^{2n}

Answer: C

Watch Video Solution

219. A is a set containing n elements. A subset P of A is chosen. The set A is reconstructed by replacing the elements of P. A subset of A is again chosen.

Number of ways of choosing P and Q so that $P \cap Q$ contains exactly one element is

A. 3^n

B. 3^{n-1}

C. $n.3^{n-1}$

D. $n.3^n$

Answer: C

Watch Video Solution

220. A is a set containing n elements. A subset P of A is chosen. The set A is reconstructed by replacing the elements of P. A subset of A is again chosen.

P and have equal number of elements is

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

B. $(2n)!$

C. ${}^{n}C_n$

D. $n!$

Answer: A

View Text Solution

221. There are 10 intermediate stations on a railway line between two particular stations. The number of ways that a train can be made to stop at 3 of these intermediate stations so that no two of these halting stations are consecutive, is

A. 56

B. 126

C. 20

D. 120

Answer: A

View Text Solution

222. No.of divisors of the form $4n + 2(n \geq 0)$ of the integer 240 is

A. 3

B. 4

C. 8

D. 10

Answer: B

View Text Solution

223. The number of ways in which 6 things can be divided

Statement-I: into 2 equal groups is 10.

Statement-II: among 2 persons equally is 20.

Which of the above statements is true.

A. only I is true

B. only II is true

C. both I and II are true

D. neither I nor II true

Answer: C

Watch Video Solution

224. IF a,b,c be the number of positive integral integral divisors of 2520 , 1800 , 2880 then the ascending order of a,b,c is

A. a,b,c

B. b, c ,a

C. c, a, b

D. a, c,b

Answer: B

Watch Video Solution

225. Match the following

List-I	List-II
$(I)^{n}C_{r+1}+2^{n}C_{r}+{}^{n}C_{r-1}$	$(a)^{(n+2)}C_{r+1}$
$(II)^{(n+1)}C_{3}-{}^{n-1}C_{3}$	$(b)(n-1)^{2}$
$(III)^{2n}C_{2}-2^{n}C_{2}$	$(c)n^{2}$
	$(d)^{n+1}C_{r+1}$

The correct match is

A. a,b,c

B. b, c, d

C. c, d, b

D. d, c, a

Answer: A

Watch Video Solution

226. Assertion (A) : If 5 parallel lines intersect 4 parallel lines, then the number of parallelograms formed is 80

Reason (R) : The number of parallelograms formed when a set of m parallel lines are intersecting another set of n parallel lines is $^{m}C_{2} \times {}^{n}C_{2}$

The correct answer is

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: D

Watch Video Solution

227. Assertion (A) : The number of positive integral solutions of $x_1 + x_2 + x_3 = 10$ is 36.

Reason (R) : The number positive integral solutions of the equation

$x_1 + x_2 + x_3 + ... + x_k = n$ is ${}^{n-1}C_{k-1}$, The correct answer is

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

Watch Video Solution

228. There are two ums. Um A has 3 distinct red balls and um B has 9 distinct blue balls. From each um two balls are taken out at random and them transferred to the other . The number of ways in which this can be done is

A. 36

B. 66

C. 108

D. 3

Answer: C

Watch Video Solution

229. Statement -1 the number of ways of distributing 10 identical balls in 4 distinct boxes such that no box is empty is ${}^{9}C_{3}$.

Statement -2 the number of ways of choosing any 3 places from 9 different places is ${}^{9}C_{3}$.

A. Statement-1 is true, Statement-2 is false

B. Statement-1 is false, Statement-2 is true

C. Statement-1 is true, Statement-2 is true, Statement-2 is the correct explanation for Statement-1

D. Statement-1 is true, Statement-2 is true, Statement-2 is not a correct explanation for Statement-1

Answer: C

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PRACTICE EXERCISE

1. IF ${}^{10}p_r = 5040$ then r=

A. 4

B. 9

C. 8

D. 5

Answer: A

Watch Video Solution

2. If ${}^{n}P_5 = {}^{n}P_6$ then n is

A. 15

B. 7

C. 6

D. 10

Answer: C

Watch Video Solution

3. If $^{(n+1)}P_5 : {}^{n}P_5 = 3 : 2$, find n

A. 8

B. 14

C. 10

D. 6

Answer: B

Watch Video Solution

4. If ${}^{n}P_4 : {}^{n}P_3 = 2 : 1$ then is

A. 5

B. 8

C. 7

D. 6

Answer: A

View Text Solution

5. IF ${}^{(2n-1)}P_{n-1} : {}^{(2n-1)}P_n = 3 : 5$ then n=

A. 4

B. 7

C. 8

D. 9

Answer: A

Watch Video Solution

6. 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 is

A. ${}^{12}C_8$

B. ${}^{12}P_8$

C. $2 \times {}^{12}P_8$

D. $2 \times {}^{12}C_8$

Answer: B

View Text Solution

7. There are 50 stations on a railway line. The number of different kinds of single 2nd class tickets must be printed so as to enable a passenger to go from one station to another station is

A. ${}^{50}C_2$

B. 2500

C. 2450

D. $50!$

Answer: C

Watch Video Solution

8. The number of arrangements that can be formed by taking all the letters of the word VICTORY that are to end with Y Is

A. 720

B. 5040

C. 120

D. 40320

Answer: A

Watch Video Solution

9. The letters of the word "FLOWER" are taken four at a time and arranged in all possible ways. The number of arrangements containing 'F' is

A. 60

B. 120

C. 240

D. 480

Answer: C

Watch Video Solution

10. The number of arrangements that can be formed by taking all the letters of SUNDAY which are begin with ‘Y'is

A. 120

B. 60

C. 720

D. 144

Answer: A

Watch Video Solution

11. The different words beging and ending with a vowel that can made with the letters of the word EQUATION is

A. 14400

B. 4320

C. 864

D. 1440

Answer: A

Watch Video Solution

12. The number of ways in which the letters of the word 'FRACTION' be arranged so that

No two vowels come together is

A. $5!3!$

B. $6!3!$

C. $5!^6P_3$

D. $8!$

Answer: C

Watch Video Solution

13. The number of ways in which the letters of the word 'FRACTION' be arranged so that

All the vowels come together is

A. $5!3!$

B. $6!3!$

C. $5!^4P_3$

D. $8!$

Answer: B

Watch Video Solution

14. The number of ways in which the letters of the word 'FRACTION' be arranged so that

All the vowels not come together is

A. 36000

B. 42540

C. 16800

D. 480

Answer: A

Watch Video Solution

15. The number of arrangements that can be made by using all the letters of the word MATRIX so that the vowels may be in the even places is

A. 144

B. 2880

C. 720

D. 5760

Answer: A

Watch Video Solution

16. How many ways are there to arrange the letters in the word GARDEN with the vowels in alphabetical order ?

A. 360

B. 240

C. 120

D. 480

Answer: A

Watch Video Solution

17. Find the number of ways of arranging the letters of the word TRIANGLE so that the relative positions of the vowels and consonants are not disturbed.

A. 360

B. 180

C. 720

D. 540

Answer: C

Watch Video Solution

18. The letters of the word 'MADHURI' are arranged in all possible ways. The number of arrangements in which there are 2 letters between R and D is

A. 360

B. 480

C. 960

D. 720

Answer: C

Watch Video Solution

19. The number of four digited numbers that can be formed using the digits 2,4,5,7,8 when repetition is not allowed

A. 72

B. 36

C. 24

D. 120

Answer: D

Watch Video Solution

20. The number of 5 digited numbers using 0, 1, 2,3, 4 no digit being repeated in any number is

A. 120

B. 216

C. 96

D. 910

Answer: C

Watch Video Solution

21. The number of different ways in which 4 boys and 6 girls can be arranged in a row so that no two boys shall be together are

A. $6!^{7}P_{4}$

B. $6!^{6}P_{4}$

C. $6!5!$

D. 720

Answer: A

Watch Video Solution

22. The number of ways that 5 blue balls of different sizes and 5 red balls of different sizes can be arranged in a row so that no two balls of the same colour come together is :

A. $5!5!$

B. $5!^6P_5$

C. $2 \times 5!6!$

D. $2(5!)^2$

Answer: D

View Text Solution

23. The number of ways of arranging 8 Eamcet Question papers so that best and worst never come together is

A. 30240

B. 21600

C. 5040

D. 4320

Answer: A

Watch Video Solution

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

A. $9.\ 9!$

B. $10!$

C. ${}^{10}P_9$

D. 9^9

Answer: A

Watch Video Solution

25. The total number of 8 digited numbers which have all different digits is

A. $9 \times {}^{9}P_7$

B. ${}^{10}P_8$

C. ${}^{10}P_7$

D. ${}^{10}P_6$

Answer: A

Watch Video Solution

Watch Video Solution

26. The number of natural numbers smaller than 10^4 of which all digits are different, is

A. 5275

B. $10!.9!$

C. 5273

D. 5274

Answer: D

Watch Video Solution

27. The number of all possible numbers formed out of 1, 2, 3, 4 without repetition is

A. 24

B. 6

C. 64

D. 23

Answer: C

Watch Video Solution

28. Number of 2 digit even numbers that can be formed from the digits 1, 2, 3, 4 and 5 when repetitions are not allowed is

A. 8

B. $5!$

C. 2^6

D. 1^6

Answer: A

Watch Video Solution

29. The number of 4 digited even numbers that can be formed using the digits 0, 2, 5, 7, 8 when repetition is not allowed, is

A. 60

B. 120

C. 48

D. 72

Answer: A

Watch Video Solution

30. The number of even numbers between 200 and 20,000 can be formed with the digits 0,1,2,3,4 when repetitions are not allowed is

A. 144

B. 120

C. 99

D. 96

Answer: C

View Text Solution

31. The number of numbers greater than 23000 can be formed from 1, 2, 3, 4, 5 is

A. 120

B. 96

C. 91

D. 90

Answer: D

Watch Video Solution

32. The number of four digit numbers that can be formed using the digits 1,2,3,4,5,6,7,8,9 which are divisible by 3, when repetition of digits is allowed any number of times, is

A. 2187

B. 1458

C. 6561

D. 2916

Answer: A

Watch Video Solution

33. The number of different signals which can be given from 7 different coloured sheets, taking one or more at a time is

A. 127

B. 5913

C. 13699

D. 13700

Answer: C

Watch Video Solution

34. The number of 5 letter that can be formed using the letters of the word DELHI which begin and end with and vowel when repetitions are allowed is

A. 125

B. 625

C. 500

D. 1350

Answer: C

Watch Video Solution

35. The number of four digit telephone numbers formed by the digits is (Note: 0 can be accepted in the first place)

A. $10^4 - {}^{10}P_4$

B. 10^4

C. ${}^{10}P_4$

D. 9^4

Answer: B

Watch Video Solution

36. Four dice are rolled then the number of possible out comes is

A. 5^4

B. $6^4 - 5^4$

C. $5^4 - 3^4$

D. 6^4

Answer: D

Watch Video Solution

37. A letter lock consists of 4 rings each marked with 10 different letters, the number of ways in which it is possible to make an unsuccessful attempts to open the lock is

A. 8999

B. 9999

C. 4799

D. 5689

Answer: B

Watch Video Solution

38. If $n \in N$ and $300 < n < 3000$ and n is made of digits by taking from 0, 1, 2, 3, 4, 5 then greatest possible number of values of n is (repetition is allowed)

A. 539

B. 260

C. 320

D. 300

Answer: A

Watch Video Solution

39. 5 dice are thrown then the number of out comes in which there is atleast one three is

A. $6^5 - 1$

B. $6^5 - 5^5$

C. $6^5 - 6.5^4$

D. $5^5 - 1$

Answer: B

Watch Video Solution

40. In a town the car plate numbers contain only three or four digits, not containing the digit 0. The maximum number of cars that can be numbered is

A. 6480

B. 7290

C. 5862

D. 3528

Answer: B

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41. The number of functions that can be defined from a set containing 25 elements into a set containing 30 elements is

A. ${}^{30}P_{25}$

B. ${}^{30}P_{25}$

C. 30^{25}

D. 25^{30}

Answer: C

Watch Video Solution

42. The numbers of the one one function that can be defind from A $= \{a, b, c\}$ into $B = \{1, 2, 3, 4, 5\}$is

A. ${}^5P_3$

B. ${}^5C_3$

C. 5^3

D. 3^5

Answer: A

Watch Video Solution

43. The number of one - one functions that can be defined from $A = \{a, b, c, d\}$ into $B = \{1, 2, 3, 4\}$ is

A. 12

B. 24

C. 18

D. 26

Answer: B

Watch Video Solution

44. The number of onto functions that can be defined from $A = \{1, 2, 3\}$ to $B = \{a, b, c, d\}$

A. 150

B. 0

C. 60

D. 243

Answer: B

Watch Video Solution

45. Each of the five questions in a multiple choice test has 4 possible answer . The number of different sets of possible answers is

A. 1023

B. $5^4 - 1$

C. 1024

D. 256

Answer: C

Watch Video Solution

46. The number of ways in which 7 distinct toys can be distributed among 3 children when each child is eligible to take all the toys is

A. 3^7

B. 7^3

C. 7_{P_3}

D. 7_{C_3}

Answer: A

Watch Video Solution

47. The number of ways that '6' rings can be worn on the 4 - fingers of one hand is

A. 4^6

B. 6^4

C. ${}^{6}P_4$

D. $6!$

Answer: A

Watch Video Solution

48. The number of 7 digited numbers which can be formed using the digits 1, 2, 3, 2, 3, 3, 4 is

A. 420

B. 840

C. 2520

D. 5040

Answer: A

Watch Video Solution

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49. Number of different permutations of the word “BANANA' is

A. 60

B. 40

C. 35

D. 50

Answer: A

Watch Video Solution

50. Number of different permutations of the word "INTERMEDIATE' is

A. $\frac{12!}{3!3!2!}$

B. $\frac{12!}{3!2!2!}$

C. $\frac{12!}{4!3!2!}$

D. $\frac{12!}{2!2!2!}$

Answer: B

Watch Video Solution

51. The number of ways can the letters of the word $p^2q^3r^4$ be arranged when written at full length are

A. $2!3!4!$

B. $9!$

C. $\frac{9!}{2!3!4!}$

D. $\frac{9!}{3!4!}$

Answer: C

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52. The number of ways of arranging the letters of the word 'SUCCESSFUL' so that

all S's will come together is

A. $\frac{8!}{2!2!}$

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

C. $\frac{9!}{3!}$

D. $10!$

Answer: A

Watch Video Solution

53. The number of ways of arranging the letters of the word 'SUCCESSFUL' so that

all S's will not come together is

A. $\frac{10!}{3!2!2!} - \frac{8!}{2!2!}$

B. $\frac{9!}{3!2!3!} - \frac{8!}{2!2!}$

C. $\frac{9!}{2!2!} - \frac{8!}{3!}$

D. $\frac{10!}{8!2!}$

Answer: A

Watch Video Solution

54. The number of ways of arranging the letters of the word 'SUCCESSFUL' so that

no two S's are together is

A. $\frac{7!}{2!2!}$

B. $\frac{7!}{2!2!}\frac{{}^8P_3}{3!}$

C. $\frac{7!3!}{2!2!}$

D. $\frac{{}^8P_3}{3!}$

Answer: B

Watch Video Solution

55. The number of ways of arranging the letters of the word 'SUCCESSFUL' so that

S's and U's will come together is

A. $\frac{8!}{2!}$

B. $\frac{9!}{2!}$

C. $\frac{7!}{2!}$

D. $\frac{9!}{2!2!}$

Answer: C

Watch Video Solution

56. The number of ways of arranging the letters of the word 'SUCCESSFUL' so that

Two C's are together but no two S's are together is

A. $\frac{7!}{2!2!}$

B. $\frac{6!^7P_3}{2!3!}$

C. $\frac{9!}{2!2!}$

D. $\frac{10!}{2!2!3!}$

Answer: B

View Text Solution

57. Number of arrangements of the 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

58. The number of ways in which the letters of the word BALLOON can be arranged so that two L's do not come together, is

A. 700

B. 800

C. 900

D. 1000

Answer: C

Watch Video Solution

59. There are 3 copies of each of 4 different books . The number of ways that they can be arranged in a shelf is

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

B. $\frac{11}{(3!)^2}$

C. $\frac{9}{(3!)^2}$

D. $\frac{12!}{(3!)^5}$

Answer: A

Watch Video Solution

60. There are 5 green balls of different shades and 4 red balls of identical shades. No. of ways of arranging them in a row so that · no two red balls are together is

A. 1800

B. 1100

C. 900

D. 500

Answer: A

Watch Video Solution

61. There are 5 green balls of different shades and 4 red balls of identical shades. No. of ways of arranging them in a row so that · no two green balls are together is

A. 70

B. 90

C. 120

D. 140

Answer: C

Watch Video Solution

62. There are 5 green balls of different shades and 4 red balls of identical shades. No. of ways of arranging them in a row so that · green and red balls come alternatively is

A. 120

B. 140

C. 180

D. 200

Answer: A

Watch Video Solution

63. The number of numbers greater than a million that can be formed with the digits 2, 3, 0, 3, 4, 2 and 3 is

A. 360

B. 340

C. 370

D. 350

Answer: A

Watch Video Solution

64. The number of ways in which 5 beads of different colours can be made into a necklace is

A. 24

B. 12

C. 10

D. 22

Answer: B

Watch Video Solution

65. The number of ways can five men sit around table so that all shall not have the same neighbours in any two arrangements is

A. 11

B. 12

C. 9

D. 10

Answer: B

Watch Video Solution

66. Number of ways 15 persons be seated round a table if there are 7 seats, is

A. ${}^{15}P_7$

B. ${}^{15}C_7 / 7$

C. ${}^{15}P_7 / 7$

D. $14!$

Answer: C

Watch Video Solution

67. If the letters of the word 'MIRROR' are arranged as in a dictionary, then the Rank of the given word is

A. 23

B. 84

C. 49

D. 48

Answer: A

Watch Video Solution

68. The number of ways in which 5 red beeds and 4 yellow beeds of different sizes can be made out to form a necklace so that no two yellow beads come together is

A. $\frac{4!^5P_4}{2}$

B. $6! \times {}^4P_5$

C. $\frac{6! \times {}^4P_5}{2}$

D. $4! \times {}^5P_4$

Answer: A

Watch Video Solution

69. All the numbers that can be formed using the digits 1,2,3,4,5 are arranged in the increasing order of magnitufe . The rank of 35241 is

A. 70

B. 135

C. 275

D. 584

Answer: C

Watch Video Solution

70. The sum of numbers formed by taking all the digits 2, 4, 6, 8 is

A. 123320

B. 13220

C. 133320

D. 156670

Answer: C

View Text Solution

71. The sum of all possible numbers greater than 10,000 formed by using $\{1, 3, 5, 7, 9\}$ is

A. 6666600

B. 932460

C. 6660000

D. 1968

Answer: A

Watch Video Solution

Watch Video Solution

72. The sum of all the numbers greater than 10000 formed by using digits 0, 2, 4, 6, 8, no digit being repeated in any number, is equal to

A. 5199960

B. 5209960

C. 5199980

D. 5299960

Answer: A

Watch Video Solution

73. The number of ways that all the letters of the word SWORD can be arranged such that no letter is in its original position is

A. 44

B. 32

C. 28

D. 20

Answer: A

Watch Video Solution

74. The number of ways of 5 letters put in 5 addressed envelopes so that one letter is in right envelop and all the remaining are placed in wrong envelopes is

A. 45

B. 44

C. 120

D. 25

Answer: A

Watch Video Solution

75. Ravish writes letters to his five friends and addresses the corresponding envelopes. The number of ways can the letters be placed in the envelopes so that at least two of them are in the wrong envelopes is

A. 44

B. 59

C. 119

D. 120

Answer: C

Watch Video Solution

76. Statement-I : The number of ways of arranging the letters of the word TRIANGLE so that the relative positions of the vowels and consonents are not disturbed is 360.

Statement-II : The number of ways of arranging the letters of the word MONDAY so that no vowel occupies even place is 144.

Statement-III : The number of 3 letter words using the letters of the word MISTER in which atleast one letter is repeated is 96.

Which of the above statements is true.

A. I & II are true

B. II & III are true

C. I & III are true

D. I, II & III are true

Answer: B

Watch Video Solution

77. If a, b, c are the number of functions, injections, constant functions from a set containing 3 elements into a set containing 6 elements respectively then the ascending order of a, b, c is

A. a,b,c

B. b,c, a

C. c, b, a

D. c, a, b

Answer: C

Watch Video Solution

78. Match the following

Word	Number of permutations by using all the letters
I. INTER	$(A)6!$
II. FLOWER	$(b)7!$
$III. VICTORY$	$(c)5!$

The correct match is

A. a,b,c

B. b,c, a

C. c, b, a

D. c, a, b

Answer: C

Watch Video Solution

79. Assertion (A) : There are three doors to a room. The number of ways in which a student can enter the room and leave it by a different door is 6.

Reason (R) : If an operation can be performed in m ways and another operation can be performed in n ways, then the two operations in succession can be performed in mn ways.

The correct answer is

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

Watch Video Solution

80. If $^{35}C_{n+7} = {}^{35}C_{4n-2}$, then all the values of n are given by

A. 3,6

B. 6

C. 3

D. 28

Answer: A

Watch Video Solution

81. IF $^{15}C_{r+3} = {}^{15}C_{2r-3}$, then r=

A. 4 or 7

B. 5 or 6

C. 7 or 9

D. 9 or 10

Answer: B

Watch Video Solution

82. ${}^{n-2}C_r + 2.\ {}^{n-2}C_{r-1} + {}^{n-2}C_{r-2}$ is equal to

A. ${}^{n+1}C_r$

B. ${}^{n}C_r$

C. ${}^{n}C_{r+1}$

D. ${}^{n-1}C_r$

Answer: B

Watch Video Solution

83. If ${}^{18}C_r = {}^{18}C_{r+2}$ then ${}^{R}C_5$=

A. 23

B. 46

C. 56

D. 36

Answer: C

Watch Video Solution

84. If ${}^{n}C_{4} = {}^{n}C_{8}$, then ${}^{n}C_{2}$ is

A. 64

B. 65

C. 66

D. 62

Answer: C

View Text Solution

85. $^{29}C_5 + \sum_{r=0}^{4} {}^{(33-r)}C_4$=

A. $^{32}C_4$

B. $^{35}C_5$

C. $^{34}C_4$

D. $^{34}C_5$

Answer: D

View Text Solution

86. $^{15}C_8 + {}^{15}C_9 - {}^{15}C_6 - {}^{15}C_7$ is equal to

A. 8

B. 0

C. 6

D. 4

Answer: B

Watch Video Solution

87. If ${}^{18}C_{15} + 2\left({}^{18}C_{16}\right) + {}^{17}C_{16} + 1 = {}^{n}C_{3}$ then n is

A. 19

B. 20

C. 18

D. 24

Answer: B

View Text Solution

88. $^{14}C_4 + \sum_{j=1}^{4} {}^{(18-j)}C_3$ is equal to

A. $^{14}C_5$

B. $^{18}C_5$

C. $^{18}C_4$

D. $^{19}C_4$

Answer: C

Watch Video Solution

89. If p and q are the greatest values of ${}^{2n}C_r$ and ${}^{2n-1}C_r$ respectively, then

A. p=2q

B. 2p=q

C. p=q

D. p=nq

Answer: A

Watch Video Solution

90. If ${}^{n+1}C_3 = 4({}^{n}C_2)$, then n is equal to

A. 12

B. 10

C. 16

D. 11

Answer: D

Watch Video Solution

91. ${}^{2n}C_2 - 2^nC_2 =$

A. n^2

B. $(n-1)^2$

C. $(n+1)^2$

D. $2n^2$

Answer: A

Watch Video Solution

92. The least positive integral value of x which satisfies the inequality ${}^{10}C_{x-1} > 2.\,{}^{10}C_x$ is

A. 7

B. 8

C. 9

D. 10

Answer: B

Watch Video Solution

93. The least value of the natural numbar 'n' satisfying $C(n, 5) + C(n, 6) > C(n+1, 5)$ is

A. 10

B. 12

C. 13

D. 11

Answer: D

Watch Video Solution

94. If ${}^{n}C_{r-1} : {}^{n}C_{r} : {}^{n}C_{r+1} = 2:4:5$ then (n,r) is

A. (10,4)

B. (9,7)

C. (8,3)

D. (7,2)

Answer: C

Watch Video Solution

95. ${}^{n}C_{r-1} = 330, {}^{n}C_{r} = 462, {}^{n}C_{r+1} = 462 \Rightarrow r =$

A. 3

B. 4

C. 5

D. 6

Answer: C

Watch Video Solution

96. ${}^{37}C_4 + \sum_{r=1}^{5} (42 - r)_{C_r} =$

A. ${}^{38}C_4$

B. ${}^{39}C_4$

C. ${}^{41}C_4$

D. ${}^{42}C_4$

Answer: D

View Text Solution

97. The number of ways that 3 English, 3 Hindi & 3 Telugu books can be chosen from a shelf containing 5 English, 4 Hindi and 3 Telugu books is

A. 10

B. 20

C. 40

D. 60

Answer: C

Watch Video Solution

98. The number of ways can 5 red and 4 white balls be drawn from a bag containing 10 red and 8 white balls is

A. ${}^{8}C_5 \times {}^{10}C_4$

B. ${}^{10}C_5 \times {}^{8}C_4$

C. ${}^{18}C_9$

D. ${}^{18}C_5 \times {}^{14}C_4$

Answer: B

Watch Video Solution

99. Every body in a room shakes hands with every body else. The total number of hand shakes is 66. The total number of persons in the room is

A. 11

B. 12

C. 13

D. 14

Answer: B

Watch Video Solution

100. 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. 315

Answer: C

Watch Video Solution

101. The number of ways in which 5players are selected from 10 players so that 3 particular players are always included is

A. 21

B. 26

C. 34

D. 45

Answer: A

Watch Video Solution

102. Out of 6 gentlmen and 4 ladies a committee of 5 is to be formed . The number of ways in which this can be done so as to include exactly 2 ladies is

A. 90

B. 120

C. 140

D. 180

Answer: B

Watch Video Solution

103. The number of ways that 6 questions can be chosen out of 9 questions so that the first and the last questions are always included is

A. 35

B. 56

C. 84

D. 60

Answer: A

Watch Video Solution

104. The number of ways in which 7 players can be selected from a batch of 12 players so that 3 particular players are always included and 2 particular players are always excluded is

A. 35

B. 46

C. 51

D. 63

Answer: A

Watch Video Solution

105. A person wishes to make up as many different parties of 10 as he can out of 20 friends, each party consisting of the same number. The number of ways that the same man is found in different parties is

A. 380

B. 19

C. 90378

D. 92378

Answer: D

Watch Video Solution

106. The number of ways of selecting 6 clerks from 8 male &7 female applicants if the selection is to consist of either all males or all females is

A. 25

B. 30

C. 35

D. 40

Answer: C

Watch Video Solution

107. 60 employees are there in a college. The number of ways can a cooperative committee with 10 directors be formed in which exactly 2 members would be from the commerce department of 5 members is

A. ${}^{55}C_8 \times {}^{5}C_2$

B. ${}^{8}C_3 \times {}^{5}C_3$

C. 344

D. 45

Answer: A

Watch Video Solution

108. A candidate is required to anwer 6 questions by choosing atleast one question from each section where 1^{st} section consists of 4 questions, 2^{nd} section consists of 3 questions and 3^{rd} section consists of 2 questions. The number of ways can he make up his choice is

A. 76

B. 80

C. 95

D. 63

Answer: A

Watch Video Solution

109. 15 people are to travel by a bus which can carry 9 inside and 6 outside. The number of ways can the party be distributed between inside and outside, if 3 people refuse to go out side and 2 will refuse to go inside is

A. ${}^{10}C_6$

B. ${}^{10}C_9$

C. ${}^{10}C_5$

D. ${}^{15}C_9$

Answer: A

Watch Video Solution

110. A boats crew consists of 16 men , 6 of whom can only row on one side and 4 only on the other . The number of ways in which the crew be arranged 8 on each side is

A. ${}^{16}C_4 \times 8! \times 8!$

B. ${}^{6}C_2 \times 8! \times 6$

C. ${}^{16}C_6 \times 8! \times 8!$

D. ${}^{6}C_2 \times 8! \times 8!$

Answer: D

Watch Video Solution

111. There are 20 points in plane no three of which are collinear . The number of strainght lines by joining them is

A. 190

B. 200

C. 40

D. 500

Answer: A

Watch Video Solution

112. There are 21 points in a plane no three of which are collinear.

The number of triangles formed by joining them is

A. 1330

B. 210

C. 1850

D. 180

Answer: A

Watch Video Solution

113. How many stainght lines can be drawn by joning 10 points on a circle ?

A. ${}^{55}C_8 \times {}^{5}C_2$

B. ${}^{8}C_3 \times {}^{5}C_3$

C. 344

D. 45

Answer: D

Watch Video Solution

114. The number of triangles formed by joining the vertices of a hexagon is

A. 15

B. 20

C. 19

D. 12

Answer: B

Watch Video Solution

115. A set of m parallel lines intersect another set of n parallel lines in a plane. The number of parallellograms formed is

A. ${}^{m}C_2 \times {}^{n}C_2$

B. ${}^{m}C_3 \times {}^{n}C_2$

C. ${}^{m}C_3 \times {}^{n}C_3$

D. ${}^{n}C_2 \times {}^{n}C_2 - 1$

Answer: A

Watch Video Solution

116. There are n points in a plane no three of which are in the same line excepting p points which are collinear . The number of triangle fomed by joining them is

A. ${}^{n}C_{2}$

B. ${}^{n}C_{2} - {}^{p}C_{2}$

C. ${}^{n-p}C_{3}$

D. ${}^{n}C_{3} - {}^{p}C_{3} + 1$

Answer: D

Watch Video Solution

117. There are n points in a plane no three of which are in the same line excepting p points which are collinear . The number of triangle fomed by joining them is

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

B. ${}^{n}C_{3} - {}^{p}C_{3}$

C. ${}^{(n-p)}C_{3}$

D. ${}^{n}C_{3} - {}^{p}C_{3} + 1$

Answer: B

Watch Video Solution

118. p points are chosen on each of the three coplanar lines. The maximum number of triangles formed with vertices at these points is

A. $p^3 + 3p^2$

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

C. $\frac{p^3}{2}(5p - 3)$

D. $p^2(4p - 3)$

Answer: D

Watch Video Solution

119. A regular polygon of 10 sides is constructed No. of ways 3 vertices be selected so that no two vertices are consecutive is

A. 40

B. 50

C. 60

D. 45

Answer: B

Watch Video Solution

120. A man has 6 friends. The number of ways can he invite one or more of them to dinner is

A. 63

B. 64

C. 720

D. 6

Answer: A

Watch Video Solution

121. The number of ways in which one or more balls can be selected out of 10 white , 9 green and 7 blue balls is

A. 892

B. 881

C. 891

D. 879

Answer: D

Watch Video Solution

122. A Fruits basket contains 4 organes , 5 apples and 6 mangoes . The number of ways a persom make selection of fruits from among the fruits in te basket is

A. 210

B. 209

C. 36

D. 18

Answer: B

Watch Video Solution

123. In a cross word puzzle 25 words are to be gussed of which 5 words have each an alternative solution also . The number of possible solutiions is

A. 56

B. 64

C. 150

D. $2^{25} \times 2^{6}$

Answer: B

Watch Video Solution

124. How many different sums can be formed with the following coins , a rupee a fifty paise , a twenty five paise , a ten paise , a five paise

A. 31

B. 32

C. 150

D. 44

Answer: A

Watch Video Solution

125. A question paper contains 6 question each having an alternative . The number of ways that an examine can answer one or more question is

A. 243

B. 242

C. 729

D. 728

Answer: D

Watch Video Solution

126. In a packet there are m different books, n different pens and p different pencils. No. of selections of atleast one article from the packet is

A. $(m+1)(n+1)(p+1)-1$

B. $2^{m+n+p}-1$

C. 2^{m+n+p}

D. $(m+1)(n+p+1)$

Answer: B

View Text Solution

127. The number of divisors of $2^6 3^5 5^3 7^4 11$ is

A. 11^2-1

B. 21^2-1

C. 31^2-1

D. $41^2 - 1$

Answer: D

Watch Video Solution

128. The sum of divisores of $2^5.3^4$ is

A. $\frac{2^5 - 1}{2 - 1} \cdot \frac{3^4 - 1}{3 - 1}$

B. $\frac{2^6 - 1}{2 - 1} \cdot \frac{3^5 - 1}{3 - 1}$

C. $\frac{2^4 - 1}{2 - 1} \cdot \frac{3^3 - 1}{3 - 1}$

D. $2^5.3^4$

Answer: B

Watch Video Solution

129. The number of positive divisors of $2^5, 3^6, 7^3$ is

A. 14

B. 167

C. 168

D. 166

Answer: C

Watch Video Solution

130. The number of all positive divisors of $2^5, 3^4, 5^3$ is

A. 140

B. 120

C. 168

D. 166

Answer: A

Watch Video Solution

131. Number of even proper divisors of 1008 is

A. 23

B. 18

C. 16

D. 13

Answer: A

Watch Video Solution

132. The number of positive odd divisors of 216 is

A. 4

B. 6

C. 8

D. 12

Answer: A

Watch Video Solution

133. The number of odd factors of 36000 is

A. 62

B. 12

C. 72

D. 44

Answer: B

Watch Video Solution

134. The number of ways the numbers 10,800 can be resolved as a product of two factors is

A. 30

B. 20

C. 15

D. 60

Answer: A

Watch Video Solution

135. The number of ways in which 1440 can be divided into two factors excluding 1 and itself is

A. 17

B. 18

C. 36

D. 34

Answer: A

Watch Video Solution

136. The sum of odd divisors of 360 is

A. 70

B. 78

C. 80

D. 88

Answer: B

Watch Video Solution

137. If one quarter of all three element subsets of the set $A = \{a_1, a_2, a_3, \ldots\ldots, a_n\}$ is equal to the three element subsets which contains the element az, then n is

A. 10

B. 12

C. 14

D. 20

Answer: B

Watch Video Solution

138. The number of subsets of the set $A = \{a_1, a_2, \ldots\ldots\ldots\ldots a_n\}$ which contain even number of elements is

A. 2^{n-1}

B. $2^n - 1$

C. 2^{n-2}

D. 2^n

Answer: A

Watch Video Solution

139. The number of subsets of {1,2,3,. . . .9} conatining at least one odd number is :

A. 324

B. 396

C. 496

D. 512

Answer: C

Watch Video Solution

140. A set contains (2n+1) elements. If the number of subsets of this set which contain atmost n elements is 4096, then n is

A. 15

B. 13

C. 6

D. 21

Answer: C

View Text Solution

141. In an election, no. of candidates is one more than the number of persons to be elected. If a man can vote in 30 ways, then number of candidates is

A. 2

B. 3

C. 4

D. 5

Answer: D

Watch Video Solution

142. The number of ways of dividing 12 boys into 2 groups of 7,5 boys respectively is

A. $\frac{8!}{6!5!}$

B. $\frac{9!}{5!4!}$

C. $\frac{10!}{3!2!}$

D. $\frac{12!}{7!5!}$

Answer: D

Watch Video Solution

143. The number of ways in which 12 books can be put in 3 shelves, 4 on each is

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

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

C. $\frac{12!}{(4!)^3} \times \frac{1}{3!}$

D. $\frac{12!}{(4!)^3} \times \frac{1}{3}$

Answer: C

Watch Video Solution

144. The number of ways of dividing 100 scouts into 3 squads of 50, 30, 20 respectively is

A. $\frac{80!}{60!50!40!}$

B. $\dfrac{90!}{50!40!30!}$

C. $\dfrac{100!}{50!30!20!}$

D. $\dfrac{120!}{70!50!20!}$

Answer: C

Watch Video Solution

145. The number of ways of dividing 15 cards into 3 groups of 5 cards each is

A. $\dfrac{20!}{2!(10!)^3}$

B. $\dfrac{10!}{2!(6!)^3}$

C. $\dfrac{15!}{3!(5!)^3}$

D. $\dfrac{12!}{2!(7!)^3}$

Answer: C

Watch Video Solution

146. If the number of subsets with 8 elements from the set $A = \{a_1, a_2, a_3, \ldots\ldots\ldots a_n\}, n \geq 8$ is five times the number of such subsets containg a_4, then

A. 32

B. 40

C. 45

D. 0

Answer: B

Watch Video Solution

147. At an election three wards of a town of a are canvassed by by 3,4, and 5 men respectively if 20 men volunteer , in how many can they be alloted to the different wards ?

A. ${}^{20}C_5$

B. ${}^{17}C_4$

C. ${}^{13}C_5$

D. ${}^{20}C_3 .\ {}^{17}C_4 .\ {}^{13}C_5$

Answer: D

Watch Video Solution

148. Number of ways to give 16 different things to A, B, C so that B gets 1 more than A and C gets 2 more than B, is

A. $\dfrac{16!}{4!5!7!}$

B. $4!5!7!$

C. $\dfrac{16!}{3!5!8!}$

D. $\dfrac{16!}{(4!)^3}$

Answer: A

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149. The number of ways in which and examiner can assign 20 maks to 4 question giving not less than 2 marks to any question is

A. 280

B. 365

C. 455

D. 545

Answer: C

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150. The number of ways in which 13 gold coins can be distributed among three persons such that each one get at least two gold coins is

A. 36

B. 24

C. 12

D. 6

Answer: A

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151. IF there are 6 periods in each working day of a school , then the number of ways that you can arrange 5 subjects the working day is

A. 600

B. 720

C. 1800

D. 1325

Answer: C

Watch Video Solution

152. The number of 5 digited numbers using all the digits 2, 4, 6, 8 is

A. 120

B. 480

C. 240

D. 500

Answer: C

Watch Video Solution

153. The number of 4 letter words can be formed from the letters of the word 'INFINITY' so that 2 are same 2 are different is

A. 180

B. 120

C. 144

D. 96

Answer: C

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154. There are 12 boys to be seated on 2 benches , 6 on each lench . Two of them desire to sit on the bench and two others on the other . The number of ways in which the boys can be seated on the benches is

A. $300 \times 8!$

B. $900 \times 8!$

C. $600 \times 8!$

D. $90 \times 8!$

Answer: B

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155. Out of 7 consonants and 5 vowels how many different words can be formed each consisting of 3 consonants and 2 vowels

A. 350

B. 42000

C. 4200

D. 1800

Answer: B

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156. From a company of 20 soldiers any 5 are placed on guard, each batch to watch 5 hours. The total number of hours watched by different batches selected is

A. ${}^{20}C_5$

B. ${}^{20}P_5$

C. ${}^{20}C_5 \times 5$

D. ${}^{20}P_5 \times 5$

Answer: C

Watch Video Solution

157. There are 7 Telugu books and 4 Hindi books. From those in how many ways can 4 Telugu and 1 Hindi book be arranged so that the Hindi book is always at the middle is

A. 3040

B. 2870

C. 4220

D. 3360

Answer: D

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158. A gentlemen invites a party of 10 guests to a dinner and places 6 of them at one table and the remaining 4 at another the table being round . The number of ways in which he can arrange the guests is

A. 152100

B. 151200

C. 115200

D. 123100

Answer: B

Watch Video Solution

159. The number of different seven digit number that can be written using only the three digits 1,2, and 3 with the condition that the digit 2 occurs twice in each number is

A. ${}^{7}P_{2}.2^{5}$

B. ${}^{7}C_{2}.2^{5}$

C. ${}^{7}C_{2}.5^{2}$

D. ${}^{7}C_{2}.10$

Answer: B

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160. Set A has 12 elements. The number of ways of selecting two subsets P and Q of A such that

Statement-I : P and Q are disjoint is 3^{12}.

Statement -II : P and Q have equal number of elements is ${}^{24}C_{12}$.

Which of the above statements is true

A. only I is true

B. only II is true

C. both I and II are true

D. either I nor II true

Answer: C

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161. If a is the number of ways of selecting 3 vowels, 2 consonents, b is the number of ways of selecting 2 vowels, 3 consonents and c is the number of ways of selecting 4 vowels, 1 consonent from the letters of the word EQUATION then descending order of a, b, c is

A. a, b, c

B. b, c, a

C. c, a, b

D. a, c, b

Answer: D

Watch Video Solution

162. Assertion (A): The number of ways in which 4 sovereings can be given away when there are 6 applicants and any applicant may have either 0, 1, 2, 3 or 4 sovereigns is 126.

Reason (R) : The number of ways that n sovereigns can be given away when there are k applicants and any applicant may have either 0,1,2,.... or n sovereigns is ${}^{(n+k-1)}C_{k-1}$. The correct answer is

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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163. Assertion (A) : A question paper contains 5 questions each having an alternative.

The number of ways that an examinee can answer one or more questions is 242.

Reason (R): The number of ways of answering one or more of n questions when each question have an alternative is $3^n - 1$.

The correct answer is

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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Example

1. In a shelf there are 3 different Hindi books and 2 different Sanskrit books. A student can select a Hindi Book and a Telugu book in $3 \times 2 = 6$ ways as explained below.

Let the Hindi books be H_1, H_2, H_3 and Sanskrit books be S_1, S_2.

The six selections are $H_1S_1, H_1S_2, H_2S_1, H_2S_2, H_3S_1, H_3S_2$

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2. If a man has 3 different coloured plants and 3 different coloured shirts. The number of ways that he can select a pair (I,e. one pant and one shirt is $3 \times 3 = 9$ as explained below.

Let the plants be P_1P_2, P_3 and shirts be S_1, S_2, S_3. He can select a pair from the following

$P_1S_1, P_1S_2, P_1S_3, P_2S_1, P_2S_2, P_2S_3, P_3S_1, P_3S_1, P_3P_2, P_3P_3$., 9 ways.

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3. A two wheeler agent sells scooters, motorcycle. In each body pattern two capacities 100.C.C. and 150 C.C. available. In each capacity there are four colour. The number of choices a custumer will have to buy a vehicles is $2 \times 2 \times 4 = 16$

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4. A shelf contains 3 different Hindi books (H_1, H_2, H_3) and 2 different Sanskrit books (S_1, S_2). The number of ways to select one book of any language either Hindi or sanskrit is (3+2) i.e., ways. The 5 ways are H_1, H_2, H_3, S_1, S_2

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5. There are 16 two bed room flats in a building and 10 two bed room flats in another building and 8 two bedroom flats in a third building. The number of choices a cudtomer will have for buying a flat is 16+10+8=24

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6. Consider the letters of the word 'RAMA'.

Here all the letters are not distinct. Two letters A, A are identical.

Now let us select 2 of them and then arranging in order we get

RA, AR, RM, MR, AM, MA, AA

Observe that here we are not getting 12 permutations as in Example 1. Now are getting only 7 arranger

This is because all the 4 letters are not distinct.

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7. Find the number of seven digited palindromes that can be formed using 0,1,2,3,4.

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Solved Example

1. If ${}^{n}P_{4} = 1680,$ find n.

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2. If ${}^{12}P_{r} = 1320$ find r

Watch Video Solution

3. If ${}^{(n+1)}P_5 : {}^{n}P_5 = 3 : 2$, find n

Watch Video Solution

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

Watch Video Solution

5. Find the number of 4 letter words that can be formed using the letters of the word EQUATION. How many of these words begin with E ? How many end with N ? How many begin with E and end with N ?

Watch Video Solution

6. How many 4 letter words can be formed using the letters of the word ARTICLE such that

each word begin with vowel

Watch Video Solution

7. How many 4 letter words can be formed using the letters of the word ARTICLE such that

the word contains A but not E

Watch Video Solution

8. How many 4 letter words can be formed using the letters of the word ARTICLE such that

each word must contain atieast one vowel

View Text Solution

9. Find the number of ways to arrange 5 boys and 5 girl in a row such that

all the girls must sit together

Watch Video Solution

10. Find the number of ways to arrange 5 boys and 5 girl in a row such that

no two girls sit together

Watch Video Solution

11. Find the number of ways to arrange 5 boys and 5 girl in a row such that all the boys sit together and all girls sit together

Watch Video Solution

12. Find the number of ways to arrange 5 boys and 5 girl in a row such that

no two of the same sex sit together

Watch Video Solution

13. In how many 9 mathematics papers can be arranged so that the best and the worst

may come together

Watch Video Solution

14. In how many 9 mathematics papers can be arranged so that the best and the worst

may come together

Watch Video Solution

15. Find the number of ways of arranging the letters of the word 'FATHER'so that the relative positions of vowels and consonants are not disturbed.

Watch Video Solution

16. Find the number of ways of arranging the letters of the word 'FATHER' so that

no vowel occupies even place.

Watch Video Solution

17. Find the number of ways in which 5 boys and 4 girls can be arranged along a row such that atleast one of the first 3 places must be arranged with a girl,

Watch Video Solution

18. Find the number of ways of arranging 15 students $A_1, A_2, \ldots\ldots\ldots A_{15}$ in a row such that A_1, A_2 and A_3 sit together in specified order

Watch Video Solution

19. Find the number of ways of arranging 15 students $A_1, A_2, \ldots\ldots, A_{15}$ in a row such that

A_2 must be seated after A_1 and A_3 must come after A_2

Watch Video Solution

20. Find the number of ways of arranging 15 students $A_1, A_2, \ldots\ldots, A_{15}$ in a row such that

neither A_2 nor A_3 be seated before A_1

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21. Find the member of 4-digit numbers that can be formed using the digits 2,3,5,6,8 (without repetition). How many of them are divisible by 2

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22. Find the member of 4-digit numbers that can be formed using the digits 2,3,5,6,8 (without repetition). How many of them are divisible by 3

Watch Video Solution

23. Find the member of 4-digit numbers that can be formed using the digits 2,3,5,6,8 (without repetition). How many of them are divisible by 4

Watch Video Solution

24. Find the member of 4-digit numbers that can be formed using the digits 2,3,5,6,8 (without repetition). How many of them are divisible by 5

Watch Video Solution

25. Find the member of 4-digit numbers that can be formed using the digits 2,3,5,6,8 (without repetition). How many of them are divisible by 25

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26. Find the number of 4 digited numbers that can be formed by using the digit 0,2,3,5,7,8 which are divisble by

2

Watch Video Solution

27. Find the number of 4 digited numbers that can be formed by using the digit 0,2,3,5,7,8 which are divisble by

3

Watch Video Solution

28. Find the number of 4 digited numbers that can be formed by using the digit 0,2,3,5,7,8 which are divisble by

4

Watch Video Solution

29. Find the sum of all 4 - digited numbers that can be formed using 1,3,4,5,7 without repetition.

Watch Video Solution

30. Find the sum of all 4 - digited numbers that can be formed using 1,3,4,5,7 without repetition.

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31. If the letters of the word "SIPRON' are arranged in all possible ways and the words thus formed are arranged in dictionary order. Find the rank of the word 'PRISON'.

Watch Video Solution

32. If the letters of the word 'STREAM' are arranged in all possible ways and the words thus formed are arranged as in a dictionary. Find the word whose rank is 257.

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33. If there are 30 Railway stations on a Railway line, how many number of single second class tickets must be printed so as to enable a passenger to travel from one station to another.

Watch Video Solution

34. How many 4 digited numbers can be formed using 0, 1, 2,3,4 when repetition is allowed.

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35. Find the number of 4 letter words that can be formed using the letters of the word 'ARTICLE' in which atleast one letter is repeated.

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36. Find the number of 5 letter words that can be formed using the letters of the word 'MIXTURE' which begin with an vowel when repetitions are allowed.

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37. Find the number of 4-digit numbers that can be formed using the digits 0, 1,2, 3, 4, 5 which are divisible by 6 when repetition of the digits is allowed

Watch Video Solution

38. Find the number of 4-digit number that can be formed using the digits 1,2,3,4,5,6 that are divisble by when repectiton is allowed

View Text Solution

39. Find the number of palindromes with 6 digits that can be formed using the digits (i) 0,2,4,6,8 (ii) 1,3,5,7,9

Watch Video Solution

40. Find the number of ways to arrange 8 persons around a circle by taking 4 at a time.

Watch Video Solution

41. Find the number of ways to arrange 8 persons around circular table id

two specified persons wish to sit together

Watch Video Solution

42. Find the number of ways to arrange 8 persons around circular table id

never sit together

View Text Solution

43. A family consists of father, mother 2 daughter and 2 sons. In how many different ways can they sit at a around table if 2 daughter wish to sit on either

Watch Video Solution

44. Find the number of ways of arranging 6 boys and 6 girls around a circle so that

all the girls come together

Watch Video Solution

45. Find the number of ways of arranging 6 boys and 6 girls around a circle so that

no two girls come together

Watch Video Solution

46. Find the number of ways of arranging 6 red roses and 3 yellow roses of different sizes into a garland. In how many of them all the yellow roses come together.

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47. In how many ways 20 different coloured flowers can be arranged into a garland by taking 10 at a time so that 2 specified

colours must occur in the garland but not come together

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48. Find the number of arrangements by arranging all the letters of the word 'BANANA'

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49. Find the number of ways of arranging the letters of the word $a^4b^3c^5$ in its expanded form.

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50. Find the number of ways of arranging the letters of the word 'SHIPPING' such that

(i) 2 P's will come together

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51. Find the number of ways of arranging the letters of the word 'SHIPPING' SUCH' that

2P's do not come together

Watch Video Solution

52. Find the number of ways of arranging the letters of the word 'BRINGING' so that they begin and end with I.

Watch Video Solution

53. How many numbers can be formed using all the digits 1,2,3,4,3,2,1 such that even digits always occupy even places ?

Watch Video Solution

54. A book store has m copies each of n different books. Find the number of ways of arranging these books in a shelf.

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55. Find the number of 4 - letter words that can be formed using the letters of the word RAMANA.

Watch Video Solution

56. If the letters of the 'AJANTA' are permutated in all possible ways and the words thus formed are arranged in dictionary order. Find the rank of 'JANATA'

Watch Video Solution

57. Show that $^{10}C_2 +^{11} C_2 +^{12} C_2 +^{13} C_2 + \ldots +^{20} C_2 =^{21} C_3 -^{10} C_3$.

Watch Video Solution

58. In how many ways 3 different numbers which are in A.P. can be selected from 1, 2, 3, ... 10

Watch Video Solution

59. If ${}^{17}C_{2t+1} = {}^{17}C_{3t-5}$, find t.

Watch Video Solution

60. Find the number of ways of forming a committee of 5 members from 6 men and 3 ladies.

Watch Video Solution

61. In a class there are 50 students. If each student plays a chess game with each other student, then find the total number of games played by them

Watch Video Solution

62. Find the number of ways of selecting 5 objects from 9 dissimilar objects such that

a particular object is included

Watch Video Solution

63. Find the number of ways of selecting 5 objects from 9 dissimilar objects such that

a particular object is not included

View Text Solution

64. Prove that $3 \leq r \leq n$

$${}^{n-3}C_r + 3^{n-3}C_{r-1} + 3^{n-3}C_{r-2} + {}^{n-3}C_{r-3} = {}^{n}C_r$$

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65. Prove ${}^{25}C_4 + \sum_{r=0}^{4} {}^{(29-r)}C_3 = {}^{30}C_4$

Watch Video Solution

66. There are 20 points in a plane out of which 7 points are collinear and no three of the points are collinear unless all the three are from these 7 points. Find the number of different straight lines.

Watch Video Solution

67. For a cricket trem people from one class and 8 people from another class have come for selection . In how ways can we select a cricket team of 11 people taking at least 2 from the firstt class and at least one form another class ?

Watch Video Solution

68. How many 4 letter words can be formed using the letters of the word 'PROPORTION'.

Watch Video Solution

69. In how many ways 4 rupee coins can be distributed among 5 persons so that any person may have either 0,1,2,3,4.

View Text Solution

70. Find the number of selections of 10 balls from unlimited of red, black, white and green balls so that the each selection must contains atleast one ball of each colour.

View Text Solution

71. There are 8 intermediate railway stations between Vijayawada and Hyderabad. In low many ways can a train be stopped at 3 of these stations such that no two of them are consecutive.

View Text Solution

72. Out of 8 gentlemen and 5 ladies a committee of 5 is to be formed. Find the number of ways in which this can be done so as to include atleast 2 ladies.

Watch Video Solution

73. Two students A and B are having 8 different books and 5 different books respectvely. In how many ways they can exchange the books.

View Text Solution

74. There are 4 mangoes, 3 apples 2 oranges in bag, fruits of the same variety being identical. In how many different ways can a selection of fruits be made if

atleast one fruit is to be selected.

Watch Video Solution

75. There are 4 mangoes, 3 apples 2 oranges in bag, fruits of the same variety being identical. In how many different ways can a selection of fruits be made if

atleast one fruit is to be selected.

Watch Video Solution

76. There are 4 mangoes, 3 apples, 2 oranges in a bag, fruits of the same variety being identical. In how many different ways can a selection of fruits be made if

atleast one of each kind is to be selected

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77. Find the number of proper divisors of 2520

How many of them are odd ? Find their sum

Watch Video Solution

78. Find the number of proper divisors of 2520

How many of them are divisble by 10. Find their sum?

View Text Solution

79. How many selections of atleast one red ball can be made from 4 red balls and 3 green balls if balls if balls of same colour are different in size.

View Text Solution

80. If n persons are sitting in a row. Find the number of ways of selecting 2 persons so that they are not adjacent to each other .

View Text Solution

81. If 30 persons are sitting around a circle. In how many ways can 2 person out of them be selected so that they are not adjacent.

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82. Find the number of integral solutions of x+y+z+t=29 where $x \geq 1, y \geq 1, z \geq 3$ and $t \geq 0$

Watch Video Solution

83. Find the number of non negative integral solutions of $x_1 + x_2 + x_3 + x_4 \leq 20$

Watch Video Solution

84. In how many ways the number 18900 can be split in to two factors which are relative prime.

Watch Video Solution

85. Find the number of positive integral solutions of $x_1x_2x_3 = 30$

.

Watch Video Solution

86. Find the number of ways keeping 5 letters in 5 addressed envelopes

Watch Video Solution

87. Find the exponent of 3 in $\lfloor 100$

Watch Video Solution

88. What is the largest positive integer n such that $\lfloor 33$ is divisible by 2".

Watch Video Solution

89. Find the exponent of 2 in ${}^{20}C_{10}$

View Text Solution

90. Find the number· of proper divisors of 15!

View Text Solution

91. Find the number of zeros at the end of 15!

Watch Video Solution

92. In how many ways 100 persons can be arranged along a row so that two specified persons must always be separated by exactly 7 of them.

Watch Video Solution

93. Find the number of 4-digited numbes of the form xyzt withx,z, $t < y$ and $x \neq 0$

Watch Video Solution

94. In how many ways 10 persons $A_1, A_2, A_3, \ldots. A_{10}$ can be arranged along a row in such a way that A_2 must always occupy the middle place to that of A_1, A_3.

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95. In how many ways can 10 men and 10 women be divided into 10 couples, each consisting of a man and woman.

Watch Video Solution

96. How many on-to functions can be defined from a set A containing n elements to another set B containing 3 elements

Watch Video Solution

97. How many +ve integers can be formed using 0,1,2 which are less than 10^n where n is +ve integer

Watch Video Solution

98. In a class room there are 10 rows and in each row there are 2 chairs. In how many ways 10 boys and 10 girls can be arranged in these 20 chairs so that in each row one girl and one boy must be seated

Watch Video Solution

99. How many different 5-digited numbers can be made, the sum of whose digits is even.

Watch Video Solution

100. Find the number of onto functions that can be defined from a set

$A = \{a_1, a_2, \ldots\ldots, a_n)$ onto another set B= (x,y,z) such that a_1 is always mapped to x

View Text Solution

101. How many 5 digited numbers can be made with odd digits so that no two consecuitive digits are same.

Watch Video Solution

102. In how many ways 5 letters can be selected from five A's, four B's, three C's, and two O's

View Text Solution

103. In how many ways 5 post letters of which 3 are alike and two are distinct can be posted in 4 different boxes.

View Text Solution

104. Find the number of positive integral solutions of $x_1x_2x_3x_4 = 1050.$

Watch Video Solution

105. Find the number of positive intergral solutions of $x_1x_2x_3 = 54$ where $x_1, x_2, x_3 \neq 1$

View Text Solution

106. Prove that the number of selections of n things from two sets of n identical things and n other distinct things is $(n+2)2^{n-1}$

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107. Find the number of non negative integral solutions of

$x_1 + x_2 + x_3 + 4x_4 = 20$

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108. Consider $A = \{1, 2, 3, \ldots\ldots, 10\}$ Find the sum of all products of numbers by taking one or more from A.

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109. In how many ways 5 couples can be arranged along a row so that no husband sit before his wife

Watch Video Solution

110. In a class room there are 10 rows and in each row there are 2 chairs. In how many ways 10 boys and 10 girls can be arranged in these 20 chairs so that in each row one girl and one boy must be seated

Watch Video Solution

111. In how many ways 10 people take seats in 24 fixed seats arranged in a row so that out of every pair of seats equidistant from the beginning and ending atleast one seat is empty

View Text Solution

112. In how many ways can 4 persons can be arranged in a row of 12 fixed seats so that each persons has exactly one neightbour

View Text Solution

113. In how many different ways can ca sum of Rs. 20 be paid in one ruppee coins, 50 paisa coins and 25 paisa coins if each variety of coins is available in unlimited number

View Text Solution

114. How many integers between 1 and 10^6 have the sum of digits equal to 18.

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115. Find the number of rectangles from a rectangles of size 10×9. Also find the number of square with size 4×4. Also find the total number of rectangles excluding squares.

View Text Solution

116. Find the number of on-to functions from a set A onto B where n(A)=6 and n(B)=4.

View Text Solution

117. The number of constant functions that can be defined from the set $A = \{a_1, a_2, a_3 \ldots, a_n\}$ to the set $B = \{b_1, b_2, \ldots . b_n\}$is

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118. Show that the number of ways to select 'r' objects from n distinct objects which are arranged along a row so that no two of the selected objects are consecutive is $^{(n-r+1)}C_r, \quad \text{where} \quad \geq 2r - 1$

View Text Solution

119. 8 different things are arranged along a circle. In how many ways can 3 objects be selected such that no two of the selected objects are consecutive.

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120. In how many ways 4 persons can be arranged in 3 rows with out any restriction. If each row can accommodate any number of persons.

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EXERCISE-2.1 (Level-1)

1. If ${}^{n}P_{3} = 1320$, find n.

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2. If ${}^{n}P_{7} = 42.\,{}^{n}P_{5}.$ find n.

Watch Video Solution

3. If ${}^{n}P_{5} : {}^{n-1}P_{5} = 3 : 2$ then find n.

Watch Video Solution

4. If ${}^{18}P_{(r-1)} : {}^{17}P_{(r-1)} = 9 : 7$, find r.

Watch Video Solution

5. If ${}^{9}P_{5} + 5\ {}^{9}P_{4} = {}^{10}P_{r}$ then find r

Watch Video Solution

6. Find the number of 4 letter words that can be made from the letters of the word 'CONSIDER that are begin with C and end with R.

Watch Video Solution

7. Find the number of 4 letter words that can be formed using the letters of the word MIXTURE which

(1) Contain the letter X

Watch Video Solution

8. Find the number of 4 letter words that can be formed using the letters of the word MIXTURE which

do not contain the letter X

Watch Video Solution

9. Find the number of 4 letter words that can be formed using the letters of the word "EQUATION".

How many of them (i) begin with vowel

Watch Video Solution

10. Find the number of 4 letter words that can be formed using the letters of the word "EQUATION".

begin and end with vowe

View Text Solution

11. Find the number of 4- letter words that can be formed using the letters of the word. MIRACLE. How many of them begin with an vowel

Watch Video Solution

12. Find the number of 4- letter words that can be formed using the letters of the word. MIRACLE. How many of them begin and end with vowels

Watch Video Solution

13. Find the number of 4-letter words that can be formed using the letters of the word MIRACLE. How many of them end with a consonant ?

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14. Find the number of ways of permuting the letters of the word PICTURE so that

all vowels come together

Watch Video Solution

15. Find the number of ways of permuting the letters of the word PICTURE so that

no two vowels come together

Watch Video Solution

16. Find the number of ways of permuting the letters of the word PICTURE so that

the relative positions of vowels and consonants are not distributed.

Watch Video Solution

17. Find the number of ways to arrange 10 students along a row by taking 4 at a time. In how many of these arrangements a specified student always occur.

Watch Video Solution

18. Find the number of arrangements that can be made by using all the letters of the word "EQUATION" so that the consonants may be in even places,

Watch Video Solution

19. Find the number of arrangements that can be formed by using all the letters of the word "CONSIDER' so that relative positions of vowels and consonants remain unaltered.

Watch Video Solution

20. How many numbers between 6000 and 10000 can be formed using the digits 2, 3, 4, 6, 7, 9 without repetition.

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21. Find the number of numbers that are greater than 4000 which can be formed using the digits 0,2,4,6,8 without repetition.

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22. In a class there are certain number of students. On the new year day every student posts a greeting card to all of his classmates. If the total number of greeting cards posted by them is 870. Then find the number of students.

Watch Video Solution

23. Find the number of 4-letter words that can be formed using the letters of the word "ARTICLE which

contain the letter A

Watch Video Solution

24. Find the number of 4-letter words that can be formed using the letters of the word "ARTICLE which

do not contain E

Watch Video Solution

25. How many 4 letter words can be formed using the letters of the word ARTICLE such that

the word contains A but not E

Watch Video Solution

26. Find the number of 4-letter words that can be formed using the letters of the word "ARTICLE which

contain atleast one of A, E

Watch Video Solution

27. Find the number of ways of arranging the letters of the word

'KRISHNA'so that

all the vowels come together

Watch Video Solution

28. Find the number of ways of permuting the letters of the word

PICTURE so that

no two vowels come together

Watch Video Solution

29. Find the number of ways of permuting the letters of the word

PICTURE so that

the relative positions of vowels and consonants are not distributed.

Watch Video Solution

30. Find the number of ways of arranging 6 boys and 6 girls in a row so that

all the girls sit together

Watch Video Solution

31. Find the number of ways of arranging 6 boys and 6 girls in a row so that

no two boys sit together

Watch Video Solution

32. In how many ways 6 boys and 6 girls can be arranged along a row so that

no two of the same sex come together

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33. Find the number of ways of seating 10 students $A_1, A_2. \dots . A_{10}$ in a row such that (i) A_1, A_2, A_3 sit together (ii) A_1, A_2, A_3 sit in a specified order (iii) A_1, A_2, A_3 sit together ina specified order.

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34. Find the number of ways of seating 10 students $A_1, A_2. \dots . A_{10}$ in a row such that (i) A_1, A_2, A_3 sit together (ii)

A_1, A_2, A_3 sit in a specified order (iii) A_1, A_2, A_3 sit together ina specified order.

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35. Find the number of ways of seating 10 students $A_1, A_2. \ldots . A_{10}$ in a row such that (i) A_1, A_2, A_3 sit together (ii) A_1, A_2, A_3 sit in a specified order (iii) A_1, A_2, A_3 sit together ina specified order.

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36. In how many ways 10 persons $A_1, A_2, A_3, A_4. \ldots \ldots, A_{10}$ can be seated along a row such that

A_2, A_3, A_4 sit always after A1

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37. In how many ways the 26 English letters can be arranged along a line so that all the 5 vowels must occur always after the letter 'B'.

Watch Video Solution

38. If the letters of the word PRISON are permuted in all possible ways and the words thus formed are arranged in dictionary order, find the rank of the word. PRISON

Watch Video Solution

39. If the letters of the word MASTER are permuted in all possible ways and the words thus formed are arranged in the dictionary order, then find the ranks of the words

i) REMAST ii) MASTER

Watch Video Solution

40. If the letters of the word 'NORMAL' are arranged in all possible ways and the words thus formed are arranged as in dictionary. Then find the word the rank of which is 455.

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41. If the letters of the word BRING are permuted in all possible ways and the words thus formed are arranged in the dictionary order, then find the 59th word.

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42. Find the sum of all 4 digited numbers that can be formed using the digits 1,2,4,5,6 without repetition.

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43. Find the sum of all 4 digited numbers that can be formed using the digits 0,2,4,7,8 without repetition.

Watch Video Solution

44. Find the number of 4 - digited numbers that can be formed using the digits 2, 4, 5, 7 and 8.

Watch Video Solution

45. How many of them are divisible by

2

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46. How many of them are divisible by

3

View Text Solution

47. How many of them are divisible by

4

View Text Solution

48. How many of them are divisible by

5

View Text Solution

49. How many of them are divisible by

25

View Text Solution

50. There are 9 objects and 9 boxes. Out of 9 objects, 5 cannot fit in three small boxes. How many arrangements can be made such that each object can be put in one box only.

Watch Video Solution

51. Find the number of words that can be formed using all the letters of the word “REGULATIONS' such that

E always comes after R

Watch Video Solution

52. Find the number of words that can be formed using all the letters of the word 'REGULATIONS' such that

E, G always come after R

Watch Video Solution

53. Find the number of words that can be formed using all the letters of the word 'REFULATIONS' such that

the vowels must come in a specified order (need not come together)

Watch Video Solution

54. Find the number of words that can be formed using all the letters of the word 'REGULATIONS' such that

G must come after R,L must come after A, and S must come after N

Watch Video Solution

55. If there are 25 railway stations on a railway line, how many types of single second class tickets must be printed, so as to enable a passenger to travel from one station to another.

Watch Video Solution

EXERCISE-2.2 (Level-1)

1. Find the number of 4 digited numbers that can be formed using the digits 0,1,2.

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2. Find the number of 5 letter words that can be formed using the letters of the word “NATURE' that begin and end with vowel when repetitions are allowed.

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3. Find the number of 4 - digit telephone numbers that can be formed using the digits 1,2,3,4,5,6 with atleast one digit repeated.

Watch Video Solution

4. Find the number of ways of arranging 'r' things in a line using the given 'n' different things in which atleast one thing is repeated.

Watch Video Solution

5. In how many ways 5 letters can be posted in 4 post boxes.

Watch Video Solution

6. Find the number of ways to post 5 letters in 6 post boxes such that atleast two letters are posted in the same box.

Watch Video Solution

7. In how many ways a father can send his 4 children to 6 schools such that no two boys go to the same school.

Watch Video Solution

8. In how many ways 6 different toys can be distributed among 3 children so that

specified child must get exactly one toy

Watch Video Solution

9. In how many ways 6 different toys can be distributed among 3 children so that

specified child must get exactly one toy

Watch Video Solution

10. In how many ways 10 different letters can be posted in six post boxes so that at the most 4 boxes may be empty.

View Text Solution

11. A room has 6 bulbs, each has an independent switch. Find the number of ways in which the room can be lighted ?

Watch Video Solution

12. 9 Different letters of an alphabet are given. Find the number of 4 letter words that can be formed using these 9 letters which have (i) no letter is repeated (ii) atleast one letter is repeated.

Watch Video Solution

13. 9 Different letters of an alphabet are given. Find the number of 4 letter words that can be formed using these 9 letters which have (i) no letter is repeated (ii) atleast one letter is repeated.

Watch Video Solution

14. Find the number of 4 - digit numbers which can be formed using the digits 0,2,5,7,8 that are divisible by (i) 2 (ii) 4 when repetition is allowed.

Watch Video Solution

15. Find the number of 4 - digit numbers which can be formed using the digits 0,2,5,7,8 that are divisible by (i) 2 (ii) 4 when repetition is allowed.

Watch Video Solution

16. Find the number of 4-digit numbers that can be formed using the digits 0, 1,2, 3, 4, 5 which are divisible by 6 when repetition of the digits is allowed

Watch Video Solution

17. In how many ways 10 different tøys can be distributed among 10 boys so that atleast one boy must get more than one toy.

Watch Video Solution

18. In how many ways 20 different books can be distributed among 2 students so that each student must get atleast one book

Watch Video Solution

19. In how many ways 5 different objects can be distributed among 3 persons so that exactly one person receives no object.

View Text Solution

20. Find the number of numbers less than 2000 that can be formed using the digits, 1,2,3,4 if repetition is allowed.

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21. Find the number of 4 digit numbers divisible by 5 that can be formed using the digits 1, 2, 3, 4, 5 when repetition of digits is allowed.

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22. Find the number of 5-digited numbers that can be formed using the digits 0,1, 2, 3, 4 that are divisible by 4 when repetitions are allowed.

Watch Video Solution

23. How many 5 digited numbers that can be formed using 0,1, 2, 3, 4, 5, 6 that are divisible by 7 when repetition is allowed.

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24. How many 6 digited numbers that can be formed using 1, 2, 3, 4, 5, 6 which are divisible by 3 when repetition is allowed.

View Text Solution

25. Find the number of

(i) 6

View Text Solution

26. Find the number of

7 letter Palindromes that can be formed using the letters of the word EQUATION

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EXERCISE-2.3 (Level-1)

1. Find the number of ways of arranging 7 persons around a circle.

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2. Find the number of ways of arranging 5 boys and 5 girls around a circle.

Watch Video Solution

3. Find the number of ways of preparing a chain with 6 different coloured beads.

Watch Video Solution

4. In how many ways 10 persons can be arranged around a circle by taking 4 of them at a time

Watch Video Solution

5. Find the number of ways of arranging 4 boys and 3 girls around a circle so that all the girls sit together.

Watch Video Solution

6. Find the number of ways of arranging 7 gents and 4 ladies around a circular table if no two ladies wish to sit together.

View Text Solution

7. Find the number of ways of arranging 7 guests and a host around a circle if 2 particular guests wish to sit on either side of the host.

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8. Find the numberof ways of preparing a garland with 3 yellow, 4 white and 2 red roses of different sizes such that the two red roses come together.

Watch Video Solution

9. The number of ways in which 6 men and 4 ladies can sit around a round table so that no two ladies come together is

Watch Video Solution

10. Find the number of ways in which 8 men and 4 ladies can sit around a round table so that

all the ladies come together

Watch Video Solution

11. Find the number of ways of arranging 6 boys and 6 girls around a circular table so that

all the girls sit together

Watch Video Solution

12. Find the number of ways of arranging 6 boys and 6 girls around a circle so that

no two girls come together

Watch Video Solution

13. Find the number of ways of arranging 6 boys and 6 girls around a circular table so that

boys and girls sit alternately

Watch Video Solution

14. Find the number of garlands that can be made using 6 different coloured flowers taken 4 at a time

Watch Video Solution

15. Find the number of ways in which 6 red roses and 3 white roses of different sizes can be made out to form a garland so that no two white roses come together

Watch Video Solution

16. Find the number of ways in which 6 red roses and 3 white roses of different sizes can be made out to form a garland so that all the white roses come together

Watch Video Solution

EXERCISE-2.4 (Level-1)

1. Find the number of ways of arranging all the letters of the word MATHEMATICS

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2. Find the number of ways of arranging the letters of the word.

INDEPENDENCE

Watch Video Solution

3. Find the number of ways of arranging the letters of the word.

COMBINATION

Watch Video Solution

4. Find the number of ways of arranging the letters of the word.

SINGING

Watch Video Solution

5. Find the number of ways of arranging the letters of the word.

PERMUTATION

Watch Video Solution

6. Find the number of ways of arranging the letters of the word.

INTERMEDIATE

Watch Video Solution

7. Find the number of ways of arranging the letters of the word $a^4b^3c^5$ in its expanded form.

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8. There are 5 copies each of 4 different books. Find the number of ways of arranging these books in a shelf.

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9. Find the number of 7 - digit numbers that can be formed using 2,2,2,3,3,4,4.

Watch Video Solution

10. Find the number of words of arranging the letters of the word 'MISSING' which do not begin with 'S'.

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11. Find the number of 5 - digit numbers that can be formed using the digits 0,1,1,2,3.

Watch Video Solution

12. Find the number of 5 digited even numbers using the digits 1, 1, 2, 2, 4.

Watch Video Solution

13. Find the number of 5 digited numbers that can be formed using the digits 2,2,3,3,4. How many of them are greater than 30000.

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14. How many ways can the letters of the word 'BANANA' be arranged so that

all A's come together

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15. How many ways can the letters of the word 'BANANA' be arranged so that

no two A's come together

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16. In how many ways the letters of the word 'ASSOCIATIONS' can be arranged so that

all S's come together

Watch Video Solution

17. In how many ways the letters of the word 'ASSOCIATIONS' can be arranged so that

the 2A's do not come together

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18. Find the number of ways of arranging the letters of the word SPECIFIC. In how many of them

the two C's come together

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19. Find the number of ways of arranging the letters of the word SPECIFIC. In how many of them

the two I's do not come together

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20. Find the number of ways of arranging the letters of the word SINGING so that

they begin and end with I

Watch Video Solution

21. Find the number of ways of arranging the letters of the word SINGING so that

the two G's come together

Watch Video Solution

22. Find the number of ways of arranging the letters of the word SINGING so that

relative positions of vowels and consonants are not disturbed.

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23. In how many ways all the letters of the word 'ARRANGE'can be arranged so that the 2A's are separated by exactly 2 letters

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24. In how many ways the letters of the word "SUCCESS' can be arranged so that E must always occur after U

Watch Video Solution

25. The letters of the word 'EAMCET' are arranged in all possible ways and the words thus obtained are arranged as in dictionary.

Find rank of 'EAMCET.

View Text Solution

26. There are 5 like objects of first kind, 6 like objects of second kind, 4 like objects of third kind. Find the number of linear arrangements of these objects so that at least one object from like

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27. 10 beggars are sitting in a row. The number of ways in which a person having 4 one rupec coins (like), and 6 two rupee coins (like), can give away all coins to them so that each gets one coin and no two adjacent beggars will get one rupee coins. (Hint : By calling one rupee coin as A and two rupee coin as B, we have to arrange AAAABBBBBB so that no two A's are together)

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28. Between stations A and B there 10 intermediate stations. Find the number of ways in which a train can be stopped at 4 of these intermediate stations so that, no two stopping stations are adjacent ?

(Hint: Stop $\rightarrow$ S. Non stop $\rightarrow$ N we have to arrange SSSSNNNNNN letters so that no two S's are

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EXERCISE-2.5 (Level-1)

1. If ${}^{n}C_4 = 210$ then find n.

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2. If ${}^{2}C_r = 495$, find the possible values of (r).

Watch Video Solution

3. If ${}^{12}C_{r+1} = {}^{12}C_{3r-5},$ find r.

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4. If $10.\ {}^{n}C_2 = 3.\ {}^{n+1}C_3$ find n.

Watch Video Solution

5. If ${}^{9}C_3 + {}^{9}C_5 = {}^{10}C_r$ then find r.

Watch Video Solution

6. If ${}^{n}C_2 + 2({}^{n}C_3) + {}^{n}C_3 > {}^{(n+2)}C_3$ then find n.

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7. Simplify ${}^{34}C_5 + \sum_{r=0}^{4} {}^{(38-r)}C_4$.

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8. If ${}^{n}P_r = 5040 \text{ and } {}^{n}C_r = 210$, find n and r.

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9. Find the number of ways of selecting 6 members out of 12 members always including a specified member.

Watch Video Solution

10. Find the number of ways of selecting cricket eleven from 20 players such that

Exactly one of Sachin and Dravid must be included

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11. Find the number of ways of selecting cricket team of eleven from 20 players such that

at least one of Sachin and Dravid must be excluded

View Text Solution

12. In a class there are certain number of students and each student plays a chess game with each other student. If the total number of games played by them is 190. Find the number of students

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13. Find the number of 4 letter words that can he formed using one vowel and 3 consonants from the letters of the word 'ARTICLE'.

Watch Video Solution

14. The number of five letter words can be formed using 3 consonents and 2 vowels from the letters of the word MIXTURE is

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15. If n persons are sitting in a row, find the number of ways of selecting two persons, who are sitting adjacent to each other.

Watch Video Solution

16. Find the number of ways of giving away 4 similar coins to 5 boys if each boy can be given any member (less than or equal to 4) of coins.

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17. A class contains 4 boys and g girls. Every Sunday, five students with atleast 3 boys go for a pincnic. A different group is being sent every week. During the picnic, the class teacher gives each girls in the group a doll. If the total number of dolls distributed is 85, find g.

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18. In how many ways we can purchase 100 fruits from 3 varieties of fruits

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19. In how many ways a student can fail an examination having 5 subjects.

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20. In a hall, there are 10 different lamps. In how many ways can the hall be lighted.

Watch Video Solution

21. In a basket, there are 4 apples, 2 mangoes and 5 bananas. Fruits of same kind are identical. Find the total number of selections

without any restrictio

Watch Video Solution

22. In a basket, there are 4 apples, 2 mangoes and 5 bananas. Fruits of same kind are identical. Find the total number of selections

without any restrictio

Watch Video Solution

23. In a basket, there are 4 apples, 2 mangoes and 5 bananas. Fruits of same kind are identical. Find the total number of selections.

atleast one banana

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24. Find the number of positive divisors of 1080

Watch Video Solution

25. Find the number of positive divisors of 540.

Watch Video Solution

26. Find the number of even divisors of 720.

Watch Video Solution

27. Find the number of even proper divisors of $2^3 3^2 5^3$

Watch Video Solution

28. In how many ways 4900 can be expressed as product of 2 positive integers

Watch Video Solution

29. If a set A has 12 elements. Find the number of subsets of A having

4 elements

View Text Solution

30. IF a set A has 12 elements , then the number of subsets of A having atleast 3 elements is

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31. If a set A has 12 elements. Find the number of subsets of A having

atmost 3 elements

Watch Video Solution

32. In how many ways 3 different numbers which are in A.P. can be selected from 1, 2, 3, ... 10

Watch Video Solution

33. In how many ways 12 different books can be separated into 3 equal groups. In how many ways they can be distributed among 3 persons equally

Watch Video Solution

34. Prove that $\dfrac{{}^{4n}C_{2n}}{{}^{2n}C_n} = \dfrac{1.3, 5......(4n-1)}{\{1.3.5....\ (2n-1)\}^2}$

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35. There are 20 points in a plane of which 5 are collinear and no three of the points are collinear unless all the three are from these 5 points. Find the number of different straight lines passing through these points

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36. There are 20 points in a plane of which 5 are collinear and no three of the points are collinear unless all the three are from these 5 points. Find the number of different

triangles fromed by joining these points

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37. Find the maximum number of points into which 4 circles and 4 straight lines intersect

Watch Video Solution

38. If a set of in parallel lines intersect another set of parallel lines (not parallel to the lines in 1^{st} set) then find the number of parallelograms formed.

Watch Video Solution

39. Find the number of diagonals of a polygon having 20 sides

Watch Video Solution

40. IF a polygon has 35 diagonals , then the number of sides of the polygon is

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41. Find the number of ways of forming a committee of 5 persons from a group of 4 Indians and 3 Russians such that there are atleast 3 Indians in the committee.

Watch Video Solution

42. Find the number of ways of selecting a cricket team of 11 players from 7 batsmen and 6 bowlers such that there will be atleast 5 bowlers in the team.

Watch Video Solution

43. A question paper is divided into 3 sections A, B, C containing 3,4,5 questions respectively. Find the number of ways of attempting 6 questions choosing atleast one from each section.

Watch Video Solution

44. Find the number of ways of forming a committee of 5 members out of 5 men and 5 women so that in the committee women will be in a majority

Watch Video Solution

45. Find the number of ways of forming a committee of 5 members out of 5 men and 5 women so that in the committee there is atleast one man

Watch Video Solution

46. Find the number of ways of forming a committee of 5 members out of 6 Indians and 5 Americans so that always the Indians will be in majority in the committee.

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47. A double decker bus has 15 seats in the lower deck and 13 seats in the upper deck. In how many ways can a marriage party of 28 persons be arranged if 4 old people refuse to go to the upper deck and 4 children wish to travel in the upper deck only.

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48. In how many ways 40 students of a class can be divided into two equal groups such that the tallest and shortest do not belong to the same group

Watch Video Solution

49. If 20 persons are sitting in a row, find the number of ways of selecting 3 persons out of them so that no two of the selected three are consecutive.

Watch Video Solution

50. Find the number of triangles whose angular points are at the angular points of a polygon of 13 sides, but none of whose sides are the sides of the polygon.

Watch Video Solution

51. There are 8 pairs of shoes in a cupboard. Find the number of ways of selecting 4 shoes so that there is no pair ?

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52. A teacher wants to take 20 students to a park. He can take exactly 5 students at a time and will not take the same group more than once. Find the number of times

each student can go to the park.

Watch Video Solution

53. A teacher wants to take 20 students to a park. He can take exactly 5 students at a time and will not take the same group more than once. Find the number of times that

the teacher can go to the park

Watch Video Solution

54. In how many ways 5 distinct numbers can be selected from the natural numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 such that

all the 5 are not consecutive

Watch Video Solution

55. In how many ways 5 distinct numbers can be selected from the natural numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 such that atleast one of these 5 is greater than 8

Watch Video Solution

56. In how many ways 5 distinct numbers can be selected from the natural numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 such that their sum is even

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57. In how many ways 5 distinct numbers can be selected from the natural numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 such that their sum is odd

Watch Video Solution

58. In how many ways 5 distinct numbers can be selected from the natural numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 such that

their product is even

Watch Video Solution

59. In how many ways 5 distinct numbers can be selected from the natural numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 such that

their product is even

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60. In how many ways 5 distinct numbers can be selected from the natural numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 such that

The selected 5 are in A.P. with common difference 2.

Watch Video Solution

61. IF there are 6 periods in each working day of a school , then the number of ways that you can arrange 5 subjects the working day is

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62. A bag contains n white and n black balls . Pairs of balls are drawn at random without replacement successively , until the bag is empty . If the number of ways in which each pair consists of one white and one black ball is 14,400 then n=

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63. Out of 3 different books on Economics, 4 different books on political science and 5 different books on Geography, how many collections can be made, if each collection consists of

Exactly one book of each subject

Watch Video Solution

64. Out of 3 different books on Economics, 4 different books on political science and 5 different books on Geography, how many collections can be made, if each collection consists of

Atleast one book of each subject

Watch Video Solution

65. If a set A has 12 elements, find the number of subsets of A having

4 elements

Watch Video Solution

66. If a set A has 12 elements, find the number of subsets of A having

Atleast 3 elements

Watch Video Solution

67. If a set A has 12 elements, find the number of subsets of A having

Atmost 3 elements

Watch Video Solution

68. Find the number of ways in which 12 things be

Divided into 4 equal groups

Watch Video Solution

EXERCISE-2.6 (Level-2)

1. Find the number of ways in which 12 things be

Divided into 4 equal groups

Watch Video Solution

2. Find the number of proper divisors of 38808 and find their sum.

View Text Solution

3. Find the number of proper divisors of 38808 which are not divisible by 7. Also find their sum.

Watch Video Solution

4. In how many ways 38808 can be expressed as product of two positive integers.

Watch Video Solution

5. In how many ways 38808 can be resolved into two factors which are relative prime.

Watch Video Solution

6. In how many ways 1587600 can be expressed as product of 2 positive integers.

Watch Video Solution

7. Find the exponent of 12 in $\lfloor 50$

View Text Solution

8. Find the number of divisors of $\lfloor 20$

View Text Solution

9. Find the number of zeros at the end of $\lfloor 100$

View Text Solution

10. Find the number of positive integral solutions of $x_1x_2x_3 = 72$

Watch Video Solution

11. Find the number of positive integral solutions of $x_1x_2x_3 = 30.$

Watch Video Solution

12. Find the number of positive integral solutions of $x_1x_2x_3x_4x_5 = 210$, such that $x_1 \neq 1$

View Text Solution

13. Find the number of positive integral solutions of $x_1x_2x_3x_4x_5 = 840$, such that x_1 must be even.

View Text Solution

14. Find the number of positive integral solutions of $x_1x_2x_3x_4 = 2310$ such that each $x_i \neq 1$ for i=1,2,3,4

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15. Find the number of non negative integral solutions of $x_1 + x_2 + x_3 + x_4 \leq 20$

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16. Find the number of non negative integral solutions of 2x + y + z = 21.

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17. Find the number of integral solutions of $x_1 + x_2 + x_3 + x_4 = 4$ where each $x_i \geq -10$

Watch Video Solution

18. How many integral solutions are there to the systems of equations $x_1 + x_2 + x_3 + x_4 + x_5 = 20$ and $x_1 + x_2 = 15$ where $x_k \geq 0$.

Watch Video Solution

19. Find the number of ways in which an examiner can assign 30 marks to 10 questions in a question paper. (fractional marks are not allowed)

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EXERCISE-2.7 (Level-2)

1. Find the number of words that can be formed by taking all the letters of the word "QUESTION' such that

Q, N are separated exactly by 2 letters

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2. Find the number of words that can be formed by taking all the letters of the word "QUESTION' such that

Q, N are separated by atmost 4 letters

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3. In a class there are 5 rows and each row is having 2 seats. Find the number of ways to arrange 7 boys such that atleast one person must be seated in 1^{st} row

Watch Video Solution

4. In a class there are 5 rows and each row is having 2 seats. Find the number of ways to arrange 7 boys such that

the first place of each row must be filled

Watch Video Solution

5. In how many ways 26 English letters can be arranged along a line so that A, B must be separated by atleast 2 letters.

View Text Solution

6. In how many ways 10 persons $A_1, A_2, A_3, \ldots . A_{10}$ can be arranged along a row in such a way that A_2 must always occupy the middle place to that of A_1, A_3.

Watch Video Solution

7. In how many ways 26 English letters can be arranged in a row, so that the vowels A, E must always occur before the remaining 3 vowels I, O, U.

View Text Solution

8. How many 10 letter words can be formed using 26 English letters such that each word must include A, B but separated exactly with 3 letters.

Watch Video Solution

9. In how many ways 6 boys and 5 girls can be arranged along a row so that

no two girls come together

Watch Video Solution

10. In how many ways 10 distinct objects can be placed in 3 different boxes so that exactly one box will be empty

Watch Video Solution

11. Using 0, 1, 2, how many different +ve integers which are smaller than 2×10^8 and divisible by 3 can be written

Watch Video Solution

12. Find the number of +ve integers which are less than 10^8 and 3 occurs exactly once.

Watch Video Solution

13. Using the letters of the word 'RAM' How many 6 letter words can be prepared so that all the 3 letters are to appear in the same word atleast once.

Watch Video Solution

14. In how many ways 5 girls and 10 boys can be arranged along a row having 15 chairs numbered 1 to 15 such that the end seats are occupied by the girls and between any girls odd number of boys must be seated.

Watch Video Solution

15. The number of rectangles formed in a chess board is

Watch Video Solution

16. The number of rectangles which are not squares formed in a chess board is

Watch Video Solution

17. From the two system of lines x - h = 0 where $0 \leq h \leq 5$ and y - k = 0 where $0 \leq k \leq 3$,how many squares can be formed.

A. `

B.

C.

D.

Answer: 26

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18. There are 3 rows containing 2 seats in each row. In how many ways 3 persons can be seated such that no row remains empty.

Watch Video Solution

19. In how many ways 3 boys and 5 girls can be arranged in a row, so that no three or more girls sit together.

View Text Solution

20. In a class room there are three rows containing 4, 2, 2 chairs respectivley. In how many different ways six boys can be arranged so that no row remains empty.

Watch Video Solution

21. In how many ways 5 persons can be arranged in 4 rows without any restriction, if any row can accomodate all the 5 persons.

View Text Solution

22. In a class room there are 25 chairs arranged in a row. In how many ways 10 boys can be arranged in these 25 chairs, so that out of any 2 chairs located symmetrically about the middle of the row, atleast one is empty.

View Text Solution

23. How many six digited numbers that can be formed with 1, 2, 3, 4 if all the digits are to appear in the same number atleast once.

Watch Video Solution

24. How many onto functions can be defined from a set A onto another set B where n(A) = 5 and n(B) = 4.

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25. Find the number of onto functions from a set {1, 2, 3, 4, 5} to another set $\{a_1, a_2, a_3, a_4\}$ such that

$f^{-1}(a_1) = \{2\}$

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26. Find the number of onto functions from a set {1, 2, 3, 4, 5} to another set $\{a_1, a_2, a_3, a_4\}$ such that

$f^{-1}(a_1)$ is not a singleton

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27. Find the number of onto functions from a set containing A = {1, 2, 3, 4, 5) to another set B = {a, b, c, d) such that f(1) = a.

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28. How many 9 digited numbers can be formed using 0, 1, 2 so that 0, 1, 2 must occur atleast once in each 9 digited number.

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29. Find the number of functions from A to B where $A = \{a_1, a_2, a_3, a_4, a_5\}$ and $B = \{b_1, b_2, b_3, b_4\}$ such that b_1, b_2 must belong to the range of the function.

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30. In how many different ways can four tickets be selected from $(n \geq 7)$ tickets numbered from 1 to n so that no two tickets are consecutive.

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31. 100 persons are arranged in a row. In how many ways can 5 pairs of consecutive persons can be selected, so that each pair must be seperated by atleast one person

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32. In how many ways 6 natural numbers which includes 1 can be selected from first 100 natural numbers 1,2,3,..., 100 such that no two of the selected 6 are consecutive.

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33. 20 persons are sitting around a circle. In how many ways 7 persons out of them can be selected so that no two of the selected 7 are consecutive.

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34. 20 persons $A_1, A_2 \dots A_{20}$, are sitting around a circle. In how many ways 7 persons out of them can be selected such that no two of the selected 7 are consecutive and A_1 must always be one among the selected 7.

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35. 20 persons are sitting along a round circle. In how many ways 4 persons can be selected such that

exactly 3 of them are consecutive

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36. 20 persons are sitting along a round circle. In how many ways 4 persons can be selected such that

exactly 2 of them are consecutive.

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37. In how many ways 5 different numbers can be selected from1, 2, 3. ...... 100 which are in A.P.

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38. Find the number of ways of selecting 3 - number subset of the set {1, 2, 3, 4 .... 30} so that the number form a G.P. with common ratio as integer.

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39. Find the number of odd positive integral solutions of a + b + c + d = 20.

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40. In how many different ways can Rs. 30 in one ruppee coins can be distributed among 4 persons so that atleast 2 of them receive the same amount and each gets atleast one rupee.

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41. In how many different ways 24 apples (identical) be given to 3 boys and 3 girls if the total number of apples received by boys is double of that received by girls.

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42. Find the number of ways of giving away 20 biscuits (like) to three children so that each gets atleast one and no two gets the same number of biscuits.

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43. There are 12 seats in a row of which 4 are to be occupied. Find the number of ways of arranging 4 persons so that

No two persons sit side by side,

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44. There are 12 seats in a row of which 4 are to be occupied. Find the number of ways of arranging 4 persons so that

There should be atleast 2 empty seats between any two persons.

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45. There are 4 pairs of hand gloves of 4 different colours. In how many ways can they be paired off so that a left hand glove and a right handed glove are not of same colour.

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46. How many integers between 1 and 1000 have the sum of the digits equal to 6.

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47. Find the number of divisors of the number $2^{10}.5^{10}.11^{11}.13^{13}$ which of the form $4n+1(n \geq 0)$

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48. Find the greatest integer n such that $(105)^n$ divides 2007!.

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49. Find the number of pairs (x, y) so that y can be subtracted from a without borrowing where x, y are two digit numbers.

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