Question Bank

PERMUTATIONS AND COMBINATION MCQS

Class 11 - Mathematics

1. How many 4-digit numbers are there when a digit may be repeated any number of times in each number? **[1]**

   a) 5040 b) 10000

   c) 4500 d) 9000

2. All the letters of the word EAMCOT are arranged in different possible ways. The number of such arrangements in which no two vowels are adjacent to each other is **[1]**

   a) 360 b) 144

   c) 54 d) 72

3. 5 boys and 5 girls are to be seated around a table such that boys and girls sit alternately. The number of ways of seating them is **[1]**

   a) $4! \times 4!$ b) $5! \times 4!$

   c) $5! \times 2!$ d) $5! \times 5!$

4. How many words beginning with T and ending with E can be made with no letter repeated out of the letters of the word 'TRIANGLE'? **[1]**

   a) 722 b) ${}^{8}P_{6}$

   c) 720 d) 1440

5. Number of all 4 digit numbers with distinct digits is **[1]**

   a) 504 b) 9999

   c) none of these d) 4536

6. There are 12 points in a plane. The number of the straight lines joining any two of them when 3 of them are collinear, is **[1]**

   a) 64 b) 62

   c) 63 d) 65

7. In how many ways can 6 boys be arranged in a row? **[1]**

   a) 6 b) 5 !

   c) $2 \times 6!$ d) 6 !

8. The number of parallelograms that can be formed from a set of four parallel lines intersecting another set of three parallel lines is **[1]**

   a) 6 b) 18

   c) none of these d) 12

9. The number of ways in which 5 + and 5 – signs can be arranged in a line such that no two – signs occur together **[1]**

is

a) P(5, 5)
b) C(5, 5)
c) P(6, 5)
d) C(6, 5)

10. A convex polygon of n sides has twice as many diagonals as the number of sides. The value of n is **[1]**

a) 8
b) 7
c) 6
d) 5

11. How many words can be formed by using all the letters of the word 'ALLAHABAD'? **[1]**

a) 9 !
b) 1890
c) 7560
d) 3780

12. The number of three digit numbers having atleast one digit as 5 is **[1]**

a) 648
b) 225
c) 252
d) 246

13. If in a group of n distinct objects, the number of arrangements of 4 objects is 12 times the number of arrangements of 2 objects, then the number of objects is **[1]**

a) 8
b) 6
c) None of these
d) 10

14. How many words can be formed from the letters of the word 'LAUGHTER' so that the vowels are never together? **[1]**

a) 4320
b) 36000
c) 3600
d) 40320

15. The number of different four digit numbers that can be formed with the digits 2, 3, 4, 7 and using each digit only once is **[1]**

a) 24
b) 120
c) 96
d) 100

16. If C (n, 12) = C (n, 8), then C (22, n) is equal to **[1]**

a) 231
b) 303
c) 252
d) 210

17. It is required to seat 5 men and 4 women in a row so that the women occupy the even places. How many such arrangements are possible? **[1]**

a) 720
b) 24
c) 120
d) 2880

18. In how many ways can a cricket team be chosen out of a batch of 15 players, if a particular player is always chosen? **[1]**

a) None of these
b) 1364
c) 1001
d) 364

19. If ${}^{n}C_{r} + {}^{n}C_{r+1} = {}^{n+1}C_{x}$, then x = ? **[1]**

a) r + 1 b) r - 1

c) n d) r

20. The sum of the digits in unit place of all the numbers formed with the help of 3, 4, 5 and 6 taken all at a time is **[1]**

a) 432 b) 18

c) 36 d) 108

21. The number of words that can be made by re-arranging the letters of the word APURBA so that vowels and consonants are alternate is **[1]**

a) 18 b) 36

c) None of these d) 35

22. Three persons enter a railway compartment. If there are 5 seats vacant, in how many ways can they take these seats? **[1]**

a) 60 b) 125

c) 20 d) 15

23. If ${}^{n+1}C_3 = 2 \cdot {}^{n}C_2$, then n = **[1]**

a) 3 b) 4

c) 5 d) 6

24. The number of diagonals that can be drawn by joining the vertices of an octagon is : **[1]**

a) 12 b) 20

c) 28 d) 48

25. There are 13 players of cricket, out of which 4 are bowlers. In how many ways a team of eleven be selected from them so as to include at least two bowlers? **[1]**

a) 72 b) 42

c) 78 d) None of these

26. The remainder obtained when 1! + 2! + 3! + ...+ 200! is divided by 14 is **[1]**

a) 5 b) 6

c) 3 d) 4

27. If ${}^{n}C_{18} = {}^{n}C_{12}$, then ${}^{32}C_{n}$ = ? **[1]**

a) None of these b) 248

c) 992 d) 496

28. The total number of numbers from 1000 to 9999 (both inclusive) that do not have 4 different digits **[1]**

a) 9000 b) 4464

c) 4536 d) none of these

29. If ${}^{43}C_{r-6} = {}^{43}C_{3r+1}$, then the value of r is **[1]**

a) 10 b) 12

c) 6 d) 8

30. There are 10 points in a plane, out of which 4 points are collinear. The number of triangles formed with vertices as these points is **[1]**

a) 120 b) 20

c) None of these d) 116

31. If ${}^{m}C_1 = {}^{n}C_2$, then **[1]**

a) 2m = n(n + 1) b) 2m = n

c) 2m = n(n - 1) d) 2n = m(m - 1)

32. If $\frac{1}{6!} + \frac{1}{7!} = \frac{x}{8!}$, then x = ? **[1]**

a) 32 b) 64

c) 48 d) 56

33. The number of arrangements of the word **DELHI** in which E precedes I is **[1]**

a) 30 b) 59

c) 60 d) 120

34. How many 3-digit even numbers can be formed with no digit repeated by using the digits 0, 1, 2, 3, 4 and 5? **[1]**

a) 56 b) 52

c) 50 d) 54

35. The number of different ways in which 8 persons can stand in a row so that between two particular persons A and B there are always two persons, is **[1]**

a) None of these b) $4! \times 5!$

c) $15 \times 4! \times 5!$ d) $60 \times 5!$

36. An examination paper contains 12 questions consisting of two parts, A and B. Part A contains 7 questions and part B contains 5 questions. A candidate is required to attempt 8 questions, selecting at least 3 from each part. In how many ways can the candidate select the questions? **[1]**

a) 175 b) None of these

c) 210 d) 420

37. In how many ways can 10 books be arranged on a shelf so that a particular pair of books shall be never together? **[1]**

a) 9 ! b) $2 \times 9!$

c) $8 \times 9!$ d) 8 !

38. The number of possible outcomes when a coin is tossed 6 times is **[1]**

a) 36 b) 32

c) 64 d) 12

39. If ${}^{20}C_r = {}^{20}C_{r-10}$, then ${}^{18}C_r$ is equal to **[1]**

a) 4896 b) 816

c) 1632 d) None of these

40. In how many ways can the letters of the word 'PENCIL' be arranged so that N is always next to E? **[1]**

a) 1440 b) 120

c) 240 d) 720

41. Number of divisors of n = 38808 (except 1 and n) is **[1]**

a) 74 b) 70

c) 68 d) 72

42. For the post of 5 teachers, there are 23 applicants. 2 posts are reserved for SC candidates and there are 7 SC candidates among the applicants. In how many ways can the selection be made? **[1]**

a) 3920 b) 11760

c) None of these d) 5880

43. The number of ways of dividing 52 cards equally into 4 sets is **[1]**

a) $\frac{52!}{(13!)^4}$ b) $\frac{52!}{4(13!)^4}$

c) $\frac{52!}{4!(13!)^4}$ d) $\frac{52!}{4!}$

44. A polygon has 44 diagonals. The number of its sides is **[1]**

a) 8 b) 11

c) 12 d) 10

45. In how many ways can the letters of the word 'APPLE' be arranged? **[1]**

a) 90 b) 6

c) 120 d) 60

46. In how many ways can 5 white balls and 3 black balls be arranged in a row so that no two black balls are together? **[1]**

a) 40 b) 120

c) 20 d) 192

47. The number of 7 digit numbers which can be formed using the digits 1, 2, 3, 2, 3, 3, 4 is **[1]**

a) 840 b) 252

c) 504 d) 420

48. ${}^{7}p_{3}$ = ? **[1]**

a) 175 b) 210

c) 105 d) 140

49. The number of arrangements that can be formed by all the letters of the word LAUGHTER is **[1]**

a) 20160 b) 5040

c) 32768 d) 40320

50. There are 10 points in a plane, out of which 4 points are collinear. The number of line segments obtained from the pairs of these points is **[1]**

a) 41 b) 39

c) 45 d) 40

51. The number of six letter words that can be formed using the letters of the word **ASSIST** in which S's alternate with other letters is **[1]**

a) 12 b) 24

c) 18 d) None of these

52. If ${}^{n}C_3 = 220$, then n = ? **[1]**

a) 11 b) 10

c) 12 d) 9

53. How many 4-digit numbers can be formed with no digit repeated by using the digits 3, 4, 5, 6, 7, 8 and 0? **[1]**

a) 720 b) 280

c) 560 d) 840

54. The sum of all the numbers which can be formed by using the digits 1, 3, 5, 7, 9 all at a time and which have no digit repeated is **[1]**

a) 33333000 b) 266664

c) 600 d) 666660

55. If ${}^{n-1}P_3 : {}^{n}P_4 = 1 : 9$, find *n* **[1]**

a) 8 b) 4

c) 9 d) 7

56. How many different committees of 5 can be formed from 6 men and 4 women on which exact 3 men and 2 women serve? **[1]**

a) 60 b) 6

c) 20 d) 120

57. The number of ways in which 4 red, 3 yellow and 2 green discs be arranged if the discs of the same colour and indistinguishable **[1]**

a) 1260 b) 999

c) 1512 d) 2260

58. The number of all 4 digit numbers which are all different that can be formed by using the digits 0, 2, 3, 5, 8, 9, is **[1]**

a) none of these b) 360

c) 1080 d) 300

59. The number of words which can be formed out of the letters of the word ARTICLE, so that vowels occupy the even place is **[1]**

a) 1440 b) 144

c) 7! d) ${}^{4}C_4 \times {}^{3}C_3$

60. The number of ways in which 6 + and 4 – signs can be arranged in a line such that no two – signs occur together **[1]**

is

a) 5040 b) 35

c) 120 d) 210

61. In an examination there are three multiple choice questions and each question has 4 choices. Number of ways in which a student can fail to get all answer correct is **[1]**

a) 12 b) 27

c) 63 d) 11

62. The number of ways in which we can choose a committee from four men and six women so that the committee includes at least two men and exactly twice as many women as men is **[1]**

a) 128 b) None of these

c) 126 d) 94

63. How many 3-digit numbers are there? **[1]**

a) 1000 b) 729

c) 648 d) 900

64. The number of ways in which a host lady can invite for a party of 8 out of 12 people of whom two do not want to attend the party together is **[1]**

a) None of these b) ${}^{12}C_8 - {}^{10}C_6$

c) ${}^{10}C_8 + {}^{11}C_7$ d) $2 \times {}^{11}C_7 + {}^{10}C_8$

65. If ${}^{n}C_{10} = {}^{n}C_{14}$, then n = ? **[1]**

a) 10 b) 14

c) 4 d) 24

66. A polygon has 54 diagonals. Number of sides in this polygon is **[1]**

a) 36 b) 20

c) 12 d) 28

67. Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed? **[1]**

a) 25200 b) 1050

c) 6300 d) 330

68. There are 10 true-false questions. The number of ways in which they can be answered is **[1]**

a) 2^{10} b) 10

c) none of these d) 10!

69. The straight lines l_1, l_2 and l_3 are parallel and lie in the same plane. A total numbers of m points are taken on l_1; n points on l_2, k points on l_3. The maximum number of triangles formed with vertices at these points are **[1]**

a) ${}^{m}C_3 \times {}^{n}C_3 \times {}^{k}C_3$ b) ${}^{(m+n+k)}C_3$

c) ${}^{m}C_3 + {}^{n}C_3 + {}^{k}C_3$ d) ${}^{(m+n+k)}C_3 - {}^{m}C_3 - {}^{n}C_3 - {}^{k}C_3$

70. The number of arrangements of the letters of the word BHARAT taking 3 at a time is **[1]**

a) 14 b) None of these

c) 72 d) 120

71. How many diagonals are there in an octagon? **[1]**

a) 24 b) 28

c) 20 d) 36

72. $\frac{^nC_r}{^nC_{r-1}} = ?$ **[1]**

a) $\frac{n-r}{r}$ b) $\frac{n-r-1}{r}$

c) None of these d) $\frac{n-r+1}{r}$

73. Given 11 points, of which 5 lie on one circle, other than these 5, no 4 lie on one circle. Then the number of circles that can be drawn so that each contains at least 3 of the given points is **[1]**

a) 172 b) 156

c) 216 d) None of these

74. There are 6 periods on each working day of a school. In how many ways can one arrange 5 subjects such that each subject is allowed at least one period **[1]**

a) 360 b) 720

c) 3600 d) 1800

75. The number of ways, in which a student can select one or more questions out of 12 each having an alternative, is **[1]**

a) 2^{12} b) 3^{12}

c) $3^{12} + 1$ d) $3^{12} - 1$