QB365 Question Bank Software Study Materials

Combinatorics and Mathematical Induction 50 Important 1 Marks Questions With Answers (Book Back and Creative)

11th Standard

Maths

Total Marks : 50

Multiple Choice Question

50 x 1 = 50

1) The sum of the digits at the 10^{th} place of all numbers formed with the help of 2, 4, 5, 7 taken all at a time is

(a) 432 **(b) 108** (c) 36 (d) 18

2) In an examination there are three multiple choice questions and each question has 5 choices. Number of ways in which a student can fail to get all answer correct is

(a) 125 **(b) 124** (c) 64 (d) 63

3) The number of ways in which the following prize be given to a class of 30 boys first and second in mathematics, first and second in physics, first in chemistry and first in English is

(a) $30^4 \times 29^2$ (b) $30^3 \times 29^3$ (c) $30^2 \times 29^4$ (d) 30×29^5

4) The number of 5 digit numbers all digits of which are odd is

(a) 25 **(b) 5^5** (c) 5^6 (d) 625

5) In 3 fingers, the number of ways four rings can be worn is _____ ways.

(a) 4^3-1 (b) 3^4 (c) 68 **(d) 64**

6) If ${}^{(n+5)}P_{(n+1)} = \left(\frac{11(n-1)}{2}\right) . {}^{(n+3)}P_n$, then the value of n are

(a) 7 and 11 **(b) 6 and 7** (c) 2 and 11 (d) 2 and 6

7) The product of r consecutive positive integers is divisible by

(a) r! (b) (r-1)! (c) (r+1)! (d) r^r

8) The number of five digit telephone numbers having at least one of their digits repeated is

(a) 90000 (b) 10000 (c) 30240 **(d) 69760**

9) If ${}^{a2-a}C_2 = {}^{a^2-a}C_4$ then the value of 'a' is

(a) 2 **(b) 3** (c) 4 (d) 5

10) There are 10 points in a plane and 4 of them are collinear. The number of straight lines joining any two points is

(a) 45 **(b) 40** (c) 39 (d) 38

11) The number of ways in which a host lady invite 8 people for a party of 8 out of 12 people of whom two do not want to attend the party together is

(a) $2 \times {}^{11}C_7 + {}^{10}C_8$ (b) ${}^{11}C_7 + {}^{10}C_8$ **(c) ${}^{12}C_8 - {}^{10}C_6$** (d) ${}^{10}C_6 + 2!$

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

(a) 6 (b) 9 (c) 12 **(d) 18**

13) Everybody in a room shakes hands with everybody else. The total number of shake hands is 66. The number of persons in the room is

(a) 11 **(b) 12** (c) 10 (d) 6

14) Number of sides of a polygon having 44 diagonals is

(a) 4 (b) 4! **(c) 11** (d) 22

15) If 10 lines are drawn in a plane such that no two of them are parallel and no three are concurrent, then the total number of points of intersection are

(a) 45 (b) 40 (c) 10! (d) 2^{10}

16) In a plane there are 10 points are there out of which 4 points are collinear, then the number of triangles formed is

(a) 110 (b) $^{10}C_3$ (c) 120 **(d) 116**

17) In $^{2n}C_3 : {}^{n}C_3 = 11 : 1$ then n is

(a) 5 **(b) 6** (c) 11 (d) 7

18) $^{(n-1)}C_r + {}^{(n-1)}C_{(r-1)}$ is

(a) $^{(n+1)}C_r$ (b) $^{(n-1)}C_r$ **(c) $^{n}C_r$** (d) $^{n}C_{r-1}$

19) The number of ways of choosing 5 cards out of a deck of 52 cards which include at least one king is

(a) $^{52}C_5$ (b) $^{48}C_5$ (c) $^{52}C_5 + {}^{48}C_5$ **(d) $^{52}C_5 - {}^{48}C_5$**

20) The number of rectangles that a chessboard has

(a) 81 (b) 9^9 **(c) 1296** (d) 6561

21) The number of 10 digit number that can be written by using the digits 2 and 3 is

(a) $^{10}C_2+{}^{9}C_2$ **(b) 2^{10}** (c) $2^{10}-2$ (d) 10!

22) If P_r stands for $^{r}P_r$ then the sum of the series $1+ P_1 + 2P_2 + 3P_3 +...+ nP_n$ is

(a) P_{n+1} **(b) $P_{n+1}-1$** (c) $P_{n-1}+1$ (d) $^{(n+1)}P_{(n-1)}$

23) The product of first n odd natural numbers equals

(a) $^{2n}C_n \times {}^{n}P_n$ **(b) $\left(\frac{1}{2}\right)^n \times {}^{2n}C_n \times {}^{n}P_n$** (c) $\left(\frac{1}{4}\right)^n \times {}^{2n}C_n \times {}^{2n}P_n$ (d) $^{n}C_n \times {}^{n}P_n$

24) If $^{n}C_4, {}^{n}C_5, {}^{n}C_6$ are in AP the value of n can be

(a) 14 (b) 11 (c) 9 (d) 5

25) 1+3+5+7+.....+17 is equal to

(a) 101 **(b) 81** (c) 71 (d) 61

26) The number of different signals which can be give from 6 flags of different colours taking one or more at a time is _____

(a) 1958 **(b) 1956** (c) 16 (d) 64

27) $5c_1 + 5c_2 + 5c_3 + 5c_4 + 5c_5$ is equal to _____

(a) 30 **(b) 31** (c) 32 (d) 33

28) Among the players 5 are bowlers. In how many ways a team of 11 may be formed with atleast 4 bowlers?

(a) 265 (b) 263 **(c) 264** (d) 275

29) If $n+1\ C_3 = 2.nC_{21}$ then n = _____

(a) 3 (b) 4 **(c) 5** (d) 6

30) If $(a^2- a)C_2 = (a^2- a)C_4$, then a = _____

(a) 2 **(b) 3** (c) 4 (d) none of these

31) If $10^n + 3 \times 4^{n+2} + \lambda$ is divisible by 9 for all n $\in$N, then the least positive integral value of λ is _____

(a) 5 (b) 3 (c) 7 (d) 1

32) If ${}^nP_r = 720$, ${}^nC_r = 120$ then r is _____

(a) 2 (b) 4 **(c) 3** (d) 5

33) The number of parallelogram formed if 5 parallel lines intersect with 4 other paralle llines is _____

(a) 10 (b) 45 (c) 30 **(d) 60**

34) If 7 points out of 12 are in the same straight line then the number of triangles formed is _____

(a) 35 (b) 21 (c) 220 **(d) 185**

35) Out of 10 red and 8 white balls, 5 red and 4 white balls can be drawn in how many number of ways _____

(a) ${}^8C_5 \times {}^{10}C_4$ **(b) ${}^{10}C_5 \times {}^8C_4$** (c) ${}^{18}C_9$ (d) ${}^{10}C_5 \times {}^8C_4$

36) There are 10 lamps in a hall. Each one of them can be switched on independently. The number of ways in which the hall can be illuminated is _____

(a) 10^2 **(b) 10^{23}** (c) 2^{10} (d) 10!

37) ${}^nC_r + {}^{2n}C_{r-1} + {}^nC_{r-2}$ = _____

(a) ${}^{n+1}C_r$ (b) ${}^{(n+1)}C_{r+1}$ **(c) ${}^{(n+2)}C_r$** (d) ${}^{n+2}C_{r+1}$

38) If ${}^nC_4$, ${}^nC_5$ and ${}^nC_5$ are in A.P., the value of n = _____

(a) 14 (b) 11 (c) 7 (d) 8

39) Each of five questions is a multiple-choice test has 4 possible answers. The number of different sets of possible answers is _____

(a) 4^5-4 (b) 5^4-5 **(c) 1024** (d) 1023

40) The number of positive integral solution of $x \times y \times z = 30$ is _____

(a) 3 (b) 1 (c) 9 **(d) 27**

41) The number of rectangles than can be formed on a chess board is _____

(a) ${}^9C_2$ **(b) ${}^9C_2 \times {}^9C_2$** (c) 204 (d) 224

42) If ${}^nP_t$ = 720 nCr, then the value of r = _____

(a) 6 (b) 5 (c) 4 (d) 7

43) If ${}^nC_{10} = {}^nC_6$, then ${}^nC_2$ = _____

(a) 16 (b) 4 **(c) 120** (d) 240

44) Rank of the word "MOTHER" is _____

(a) 310 (b) 300 (c) 308 **(d) 309**

45) The sum of the digits in the unit's place of all the 4- digit numbers formed by 3, 4, 5 and 6, without repetition, is _____.

(a) 432 **(b) 108** (c) 36 (d) 72

46) Mark the incorrect statement of the following

(a) Factorial of a natural number n is the product of the first n natural numbers

(b) The number ways of arranging n unlike objects is n! **(c) Order matters for combination**

(d) The number of combinations of n differenty things taken r at a time is ${}^nC_r$

47) Choose the incorrect pair:

(a) $10C_1 - 10C_9$ (b) $10C_3 - 10C_7$ (c) $10C_4 - 10C_6$ **(d) $10C_5 - 10C_2$**

48) Find the number of ways in which 8 different flowers can be strung to form a garland so that 4 particular flowers are never separable _____

(a) 8! (b) 7! **(c) 4! x 4!** (d) 8!4!

49) How many triangles can be formed by joining the vertices of a hexagon?

(a) 30 (b) 120 **(c) 20** (d) 6

50) If $n \in N$, then $7^{2n} + 3^{3n-3}.3^{n-1}$ is always divisible by :

(a) 45 **(b) 25** (c) 55 (d) 35