MATHS

BOOKS - ML KHANNA

PERMUTATIONS AND COMBINATIONS

Set 1

1. If ${}^{n}P_{r} = 720{}^{n}C_{r}$ then r is equal to

A. 4

B. 5

C. 6

D. 7

Answer: C

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2. IF ${}^{10}P_r = 604800$ and ${}^{10}C_r = 120$ then r=

A. 5

B. 6

C. 7

D. none of these

Answer: C

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3. IF ${}^{n}P_r = 840, {}^{n}C_r = 35$ then n=

A. 5

B. 6

C. 7

D. none of these

Answer: C

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4. If ${}^nP_r = {}^nP_{r+1}$ and ${}^nC_r = {}^nC_{r-1}$,then the values of n and r are

A. 2,3

B. 3,2

C. 4,2

D. 2,4

Answer: B

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5. IF ${}^{m+n}P_2 = 90$ and ${}^{m-n}P_2 = 30$ then (m,n) is given by

A. (8,2)

B. (9,2)

C. (16,8)

D. (7,3)

Answer: A

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6. If ${}^nP_r = {}^nP_{r+1}$ and ${}^nC_r = {}^nC_{r-1}$,then the values of n and r are

A. (4,3)

B. (4,2)

C. (3,2)

D. none of these

Answer: C

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7. IF ${}^nC_{r-1} = 36, {}^nC_r = 84, {}^nC_{r+1} = 126$ then (n,r) is equal to

A. (8,4)

B. (7,5)

C. (9,3)

D. none of these

Answer: C

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8. If $p = {}^{n+2}P_{n+2}, q = {}^{n}P_{11}, r = {}^{n-11}P_{n-11}$ and if p=182 qr then the value of n is

A. 10

B. 12

C. 15

D. 18

Answer: B

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9. IF ${}^nC_{12} = {}^nC_8$ then n=

A. 20

B. 12

C. 6

D. 30

Answer: A

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10. IF $0 < r < s \leq n$ and ${}^nP_r = {}^nP_s$ then the value of r+s is

A. 1

B. 2

C. $2n - 1$

D. $2n - 2$

Answer: C

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11. If $^{k^2-k}C_2 = {}^{k^2-k}C_4$ then k=

A. 2

B. 3

C. 4

D. none of these

Answer: B

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12. IF ${}^{15}C_r : {}^{15}C_{r-1} = 11:5$ then r=

A. 4

B. 5

C. 6

D. 7

Answer: B

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13. If ${}^{n}C_2 : {}^{n}C_4 = 2:1$ then the value of n is

A. 8

B. 7

C. 6

D. 5

Answer: D

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14. IF ${}^{56}P_{r+6} : {}^{54}P_{r+3} = 30800 : 1$ then r=

A. 40

B. 41

C. 42

D. 43

Answer: B

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15. IF ${}^8C_r - {}^7C_3 = {}^7C_2$ then r=

A. 3

B. 4

C. 5

D. 6

Answer: C

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16. IF ${}^nC_6 : {}^{n-3}C_3 = 33 : 4$ then n=

A. 9

B. 10

C. 11

D. none of these

Answer: C

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

A. ${}^{47}C_5$

B. ${}^{52}C_5$

C. ${}^{52}C_4$

D. none of these

Answer: C

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18. The value of ${}^{50}C_4 + \sum_{r=1}^{6} {}^{56-r}C_3 =$

A. ${}^{56}C_3$

B. ${}^{56}C_4$

C. ${}^{55}C_4$

D. ${}^{55}C_3$

Answer: B

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19. IF ${}^{n+1}C_3 = 2.\ {}^{n}C_2$ then n=

A. 3

B. 4

C. 5

D. 6

Answer: C

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20. For $2 \leq r \leq n$, $\binom{n}{r} + 2\binom{n}{r-1} + \binom{n}{r-2} =$

A. $\binom{n+1}{r-1}$

B. $2\binom{n+1}{r+1}$

C. $2\binom{n+2}{r}$

D. $\binom{n+2}{r}$

Answer: D

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

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

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

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

D. none of these

Answer: C

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22. If ${}^{6}C_{n} + 2.{}^{6}C_{n+1} + {}^{6}C_{n+2} > {}^{8}C_{3}$ then the quadratic equations whose roots are α, β .

A. no common roots

B. 1 common roots

C. 2 common roots

D. imaginary roots

Answer: C

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23. If

$$\frac{[{}^nC_r + 4 \cdot {}^nC_{r+1} + 6 \cdot {}^nC_{r+2} + 4 \cdot {}^nC_{r+3} + {}^nC_{r+4}]}{[{}^nC_r + 3.\,{}^nC_{r+1} + 3 \cdot {}^nC_{r+2} + {}^nC_{r+3}]} = \frac{n+\lambda}{r+\lambda}$$

the value of λ is

A. 1

B. 2

C. 4

D. 5

Answer: C

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24. ${}^1P_1 + 2.\ {}^2P_2 + 3.\ {}^3P_3 + ... + n.\ {}^nP_n =$

A. ${}^{n+1}P_{n+1}$

B. ${}^{n+1}P_{n+1} - 1$

C. ${}^{n+1}P_{n+1} - 2$

D. none of these

Answer: B

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25. The expression

$${}^nC_r + 4{}^nC_{r-1} + 6{}^nC_{r-2} + 4{}^nC_{r-3} + {}^nC(r-4) =$$

A. ${}^{n+4}C_r$

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

C. $4.\ {}^nC_r$

D. $11,\ {}^nC_r$

Answer: A

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26. IF ${}^nC_r + {}^nC_{r+1} = {}^{n+1}C_x$ then x=

A. r

B. r-1

C. n

D. r+1

Answer: D

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27. ${}^{13}C_9 - {}^{12}C_8$ is equal to

A. ${}^{12}C_9$

B. ${}^{12}C_{10}$

C. ${}^{12}C_7$

D. ${}^{13}C_7$

Answer: A

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28. If ${}^{(n-1)}C_3 + {}^{(n-1)}C_4 > {}^{n}C_3$ then the least value of n is

A. 3

B. 4

C. 7

D. 8

Answer: C

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29. ${}^{15}C_8 + {}^{15}C_9 - {}^{15}C_6 - {}^{15}C_7$ is equal to ..... .

A. ${}^{16}C_9$

B. ${}^{16}C_7$

C. 0

D. none of these

Answer: C

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30. The smallest value of r satisfying the inequality ${}^{10}C_{r-1} > 2^{10}C_r$ is

A. 7

B. 10

C. 9

D. 8

Answer: D

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31. The number of positive terms in the sequences $x_n = \frac{195}{4.\ {}^nP_n} - \frac{{}^{n+3}P_3}{{}^{n+1}P_{n+1}}$ $n \in N$ is

A. 4

B. 3

C. 2

D. none of these

Answer: A

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32. ${}^{n+1}C_6 + {}^nC_4 > {}^{n+2}C_5 - {}^nC_5$ will hold good for all n greater than

A. 1

B. 10

C. 9

D. 8

Answer: C

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33. If ${}^{n-1}C_6 + {}^{n-1}C_7 > {}^{n}C_6$ then n is greater than

A. 4

B. 12

C. 13

D. 15

Answer: C

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34. Let T_n donote the number of traingles which can be formed using the vertices of a regular polygon of n sides. If $T_{n+1} - T_n = 21$ then n equals

A. 5

B. 7

C. 6

D. 4

Answer: B

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35. IF ${}^{2n}C_3 : {}^{n}C_2 = 11:1$ then n=

A. 5

B. 4

C. 6

D. none of these

Answer: D

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36. If ${}^{n+2}C_8 : {}^{n-2}P_4 = 57:16$ then n=

A. 20

B. 19

C. 18

D. 17

Answer: B

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37. IF ${}^{28}C_{2r} : {}^{24}C_{2r-4} = 225 : 11$ then

A. r=24

B. r=14

C. r=7

D. none of these

Answer: C

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38. The value of $\sum_{r=1}^{n} \frac{{}^{n}P_r}{r!}$ is

A. 2^n

B. $2^n - 1$

C. 2^{n-1}

D. $2^n + 1$

Answer: B

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39. The value of $\left({}^{7}C_0 + {}^{7}C_1\right) + \left({}^{7}C_1 + {}^{7}C_2\right) + ... \left({}^{7}C_6 + {}^{7}C_7\right)$ is

A. $2^8 - 2$

B. $2^8 - 1$

C. $2^8 + 1$

D. 2^8

Answer: A

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40. IF ${}^{2n+1}P_{n-1} : {}^{2n-1}P_n = 3:5$ then n is equal to

A. 4

B. 6

C. 3

D. 8

Answer: A

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41. If ${}^{n-1}C_4 - {}^{n-1}C_3 - \frac{5}{4}{}^{n-2}P_2 < 0$ then the number of values of $n \in N$ has is

A. 5

B. 6

C. 7

D. 8

Answer: B

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42. IF ${}^{n-1}C_r = \left(k^2 - 3\right){}^{n}C_{r+1}$ then $k \in$

A. $(-\sqrt{3}, \sqrt{3})$

B. $(\sqrt{3}, 2)$

C. $(0, \sqrt{3})$

D. $(\sqrt{3}, 2)$

Answer: B

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43. If ${}^{12}P_r = {}^{11}P_6 + 6.\ {}^{11}P_5$ then is r equal to

A. 6

B. 5

C. 7

D. none of these

Answer: A

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44. If a_n is the digit in the unit place of the number $1! + 2! + 3! + \ldots\ldots n!$ then

$a_8 + a_9 + a_{10} + \ldots\ldots + a_{16} =$

A. 9

B. 18

C. 27

D. none of these

Answer: C

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45. The remainder obtained when the expression $1! + 2! + 3! + \ldots (95)!$ is divided by 15 is

A. 1

B. 3

C. 14

D. none of these

Answer: B

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46. IF C_k stands for ${}^nC_k$ then $\sum_{k=1}^{n} \left(\frac{kC_k}{C_k + C_{n-k}} \right)^2$ is equal to

A. $\frac{n(n+1)(2n+1)}{24}$

B. $\frac{\left(n^2(n+1)\right)^2}{8}$

C. $\frac{n^3(n+2)}{16}$

D. $\frac{n^2(2n+1)}{12}$

Answer: A

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47. IF $\frac{1}{x(x+1)(x+2)....(x+n)} = \sum_{r=0}^{n} \frac{A_r}{x+r}$ then A_r =

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

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

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

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

Answer: B

View Text Solution

48. IF $n = {}^{m}C_2$ then ${}^{n}C_2$ is equal to

A. ${}^{m+1}C_4$

B. ${}^{m+2}C_4$

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

D. 3. ${}^{m+1}C_4$

Answer: D

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49. If $\frac{{}^{n}P_{r-1}}{a} = \frac{{}^{n}P_r}{b} = \frac{{}^{n}P_{r+1}}{c}$ then

A. $\sum \frac{1}{a} = 1$

B. $abc = 1$

C. $b^2 = a(b + c)$

D. $a^2 = c(a + b)$

Answer: C

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50. The total number of combinations of 2n different things taken any one or more at a time and total number of combinations of n different things taken one or more at a time is in ratio $65 : 1$ then the value of n is equal to

A. 4

B. 5

C. 6

D. none of these

Answer: C

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51. $\sum_{r=0}^{m} {}^{n+r}C_n$ is equal to

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

B. ${}^{n+2+2}C_n$

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

D. none of these

Answer: A

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52. $\sum_{k=m}^{n} {}^{k}C_{r}$ is equal to

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

B. ${}^{n+1}C_{r+1} - {}^{n}C_{r}$

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

D. ${}^{n+1}C_{r+1} + {}^{n}C_{r-1}$

Answer: C

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53. ${}^{n}P_{r} =$

A. ${}^{n-1}P_{r} + r.\,{}^{n-1}P_{r-1}$

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

C. $r.\,^{n-1}P_r - {}^{(n-1)}P_{r-1}$

D. $^{n-1}P_r + {}^{(n-1)}P_{(r-1)}$

Answer: A

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54. Which of the following is incorrect.

A. $^nC_r = {}^nC_{n-r}$

B. $^nC_r = {}^{n-1}C_r + {}^nC_{n-r}$

C. $^nC_r = {}^{n-1}C_r + {}^{n-1}C_{r-1}$

D. $r!{}^nC_r = {}^nP_r$

Answer: B

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55. Which of the following is correct

A. ${}^{n}P_{n} = 2^{n}P_{n-2}$

B. ${}^{n}P_{n} = {}^{n}P_{n-1}$

C. ${}^{n}P_{r} = {}^{n-1}P_{r} + r^{n-1}P_{r-1}$

D. ${}^{n}P_{r} = n^{n-1}P_{r-1}$

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

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56. The product of r consecutive integers is divisible by

A. $r!$

B. $(r-1)!$

C. $(r+1)!$

D. none of these

Answer: A

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57. The set $S: \{1, 2, 3. \ldots \ldots \ldots \ldots 12\}$ is to be partitioned into three sets A,B,C of equal size. Thus $A \cup B \cup C = S, A \cap B = B \cap C = A \cap C = \phi$ The number of ways to partition S is :

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

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

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

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

Answer: C

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58. Sum of the series $\sum_{r=1}^{n}\left(r^2+1\right)(r!)$ is

A. $(n+1)!$

B. $(n+2)!-1$

C. $n(n+1)!$

D. none of these

Answer: C

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59. The number of integral points that lie exactly in the interior of the triangle with vertices O (0,0) A (21,0) B (0,21) is

A. 105

B. 133

C. 190

D. 233

Answer: C

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Set 1 True Of False

1.

$^{4n}C_{2n} : {}^{2n}C_n = [1, 3, 5, \ldots\ldots (4n-1)] : [1, 3, 5. \ldots\ldots\ldots (2n-1)]^2$

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2. The number of permutations of n different things taken all at a time in which p particular things are never together is

$n! - (n-p+1)\,!p!$

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Set 1 Fill In The Blanks

1. If $\hat{}\ nC_{12} =^n C_8, f \in d^n C_{17}$ and $^{22}C_n$

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Set 2 Mcq

1. The number of different words (eight-letter words) ending and beginning with a consonant which can be made out of the letters of the word 'EQUATION' is

A. 5200

B. 4320

C. 1295

D. 3000

Answer: B

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2. The number of different words can be formed from the letters of the word TRIANGLE so that no vowels are together is

A. 7200

B. 36000

C. 14400

D. 1240

Answer: C

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3. The number of arrangements that can be made out of the letters of the word SUCCESS so that all S do not come together is

A. 60

B. 120

C. 360

D. 420

Answer: C

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4. All the letters of the word EAMCET are arranged in all possible ways. The number of such arrangements in which no two vowels ar adjacent to each other is

A. 360

B. 44

C. 72

D. 54

Answer: C

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5. The number of arrangements of the letters of the word BANANA in which the two Ns do not appear adjacently is a.40 b. 60 c. 80 d. 100

A. 40

B. 60

C. 80

D. 100

Answer: A

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6. The number of ways in which the letters of the word VOWEL can be arranged so that the letters O ,E occupy even places is:

A. 12

B. 18

C. 24

D. none of these

Answer: A

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7. The number of ways in which the letters of the word FRACTION be arranged so that no vowels are together is

A. 14400

B. 16440

C. 17330

D. none of these

Answer: A

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8. The number of words which can be formed out of the letters of the word ALLAHABAD such that the vowels occupy the even positions is

A. 60

B. 90

C. 120

D. none of these

Answer: A

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9. Number of ways in which the letters of word GARDEN can be arranged with vowels in alphabetical order, is

A. 120

B. 240

C. 360

D. 480

Answer: C

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10. In how many ways can the letters of the word STRANGE be arranfed so that the vowels may appear in the odd places ?

A. 1370

B. 1440

C. 1470

D. none of these

Answer: B

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11. The number of words which can be formed out of the letters a,b,c,d,e,f taken 3 together. Each word containing one vowel at least is

A. 48

B. 96

C. 32

D. none of these

Answer: B

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12. The different letters of the alphabet are given, Out of which five letter words are formed. Then the numbers of words in which at least one letter is repeated is

A. 69760

B. 30240

C. 99748

D. none of these

Answer: A

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13. Let A be a set containing 10 distinct elements, then the total number of distinct functions from A to A is

A. 10!

B. 10^{10}

C. 2^{10}

D. $2^{10} - 1$

Answer: B

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14. Total number of words formed by 2 vowels and 3 consonants taken from 4 vowels and 5 consonants is equal to 60 b. 120 c. 7200 d. none of these

A. 60

B. 120

C. 7200

D. none of these

Answer: C

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15. The number of six letter words that can be formed using the letters of the word ASSIST in which Ss alternate with other

letters is 12 b. 24 c. 18 d. none of these

A. 12

B. 24

C. 18

D. none of these

Answer: A

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16. We are required to form different words with the help of letter of the word INTEGER Let m_1 be the number of words in which I and N are never together and m_2 be the number of words which begins with I and end with R, then m_1 / m_2 is given by

A. 42

B. 30

C. 6

D. $1/30$

Answer: B

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17. the total number of arrangements which can be made out of the letters of the word ALGEBRA without altering the relative position of the vowels and consonants is

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

B. $\frac{7}{2!5!}$

C. $4!3!$

D. $\frac{4!3!}{2}$

Answer: D

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18. The number of ways in which any four letters can be selected out of the letters of the word GORCOO is

A. 7

B. 11

C. 15

D. none of these

Answer: A

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19. The total number of arrangements of the letters in the expression $x^3z^2y^4$ when written at full lengths is

A. 2520

B. 1260

C. 610

D. none of these

Answer: B

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20. The number of seven digit integers with sum of the digits equal to 10 and formed by using the digits 1 ,2 and 3 only is

A. 55

B. 66

C. 77

D. 88

Answer: C

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21. How many words can be formed by using 4 letters at a time out of the letters of the word MATHEMATICS?

A. 2500

B. 2550

C. 2454

D. 3000

Answer: C

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22. The number of ways in which an arrangement of 4 letters of the word proportion can be made is

A. 700

B. 750

C. 758

D. 800

Answer: A

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23. The number of different words that can be formed out of the letters of the word MORADABAD taken four at a time is

A. 500

B. 600

C. 620

D. 626

Answer: D

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24. 4 letters words are to be formed out of the letters of the word PASSPORT Their number is

A. 666

B. 626

C. 686

D. 606

Answer: D

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25. The number of ways in which we can select 5 letters of the word INTERNATIONAL is equal to

A. 200

B. 220

C. 242

D. 256

Answer: D

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26. How many different words can be formed by jumbling the letters of the word 'MISSISSIPPI' in which no two S are together ?

A. $8.{}^{6}C_{4}.{}^{7}C_{4}$

B. $6.7.{}^{8}C_{4}$

C. $6.8.{}^{7}C_{4}$

D. $7.{}^{6}C_{4}.{}^{8}C_{4}$

Answer: D

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Set 2 Fill In The Blanks

1. The number of words that can be formed out of the letters of the word ARTICLE so that vowels occupy even places is 574 b. 36 c. 754 d. 144

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2. The number of different words that can be formed from the letters of the word 'INTERMEDIATE' such that two vowels never come together is _____.

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3. How many words can be formed with the letters of the words ORDINATE so the vowels occupy odd places?

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4. The number of different words that can be formed with the letters of the word ORDINATE so that

Beginning with O is....

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5. How many different words beginning with O and ending with E can be formed with the letters of the word ORDINATE, so that the words are beginning with O and ending with E

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6. The number of different arrangements that can be made by using all the letters in the word MATHEMATICS is.....

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7. How many different arrangements can be made by using all the letters in the word MATHEMATICS. How many of them begin with C? How many of them begin with T?

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8. How many different arrangements can be made by using all the letters in the word MATHEMATICS. How many of them begin with C? How many of them begin with T?

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Set 3

1. How many 10 digit numbers can be written by using the digits 1 and 2.

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

B. 2^{10}

C. $10C_2$

D. $10!$

Answer: B

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2. There are 10 lamps in a hall. Each one of them can be switched on independently. Find the number of ways in which the hall can be illuminated.

A. 10^2

B. 1023

C. 2^{10}

D. $10!$

Answer: B

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3. Everybody in a room shakes hands with everybody 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

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

A. 13

B. 14

C. 15

D. none of these

Answer: C

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5. In a football championship, there were played 153 matches. Every two teams played one match with each other. The number of tems participating nt eh championship is (A) 17 (B) 18 (C) 9 (D) none of these

A. 18

B. 17

C. 16

D. none of these

Answer: A

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6. The number of different numbers of six digits each can be formed from the digits 4 5 6 7 8 9 such that they are not divisible by 5 is

A. 720

B. 600

C. 500

D. 400

Answer: B

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7. The number of 3 digit even numbers that can be formed by using the digits 1 2 3 4 and 5 is given by

A. 50

B. 52

C. 48

D. none of these

Answer: A

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8. The total number of 9-digit number which have all different digits is

A. 10!

B. 9!

C. 9.9!

D. 10.10!

Answer: C

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9. The number of numbers, lying between 99 and 1000 that can be made from the digits 2, 3, 7, 0, 8 and 6 when the digits occur only once in each number, is

A. 100

B. 150

C. 200

D. none of these

Answer: A

Watch Video Solution

10. The number of odd numbers between 1000 and 10000 can be formed with the digits 1 2 3 4 5 6 7 8 9 Is

A. 1280

B. 1836

C. 2572

D. 1680

Answer: D

Watch Video Solution

11. The number of six digit numbers that can be formed from the digits 1,2,3,4,5,6 and 7 so that digits do not repeat and the terminal digits are even, is

A. 144

B. 288

C. 720

D. none of these

Answer: C

Watch Video Solution

12. How many numbers divisible by 5 and lying between 3000 and 4000 can be formed by using the digits 3, 4, 5, 6, 7, 8 when

no digit is repeated in any such number?

A. 6

B. 12

C. 18

D. none of these

Answer: A

Watch Video Solution

13. If repetition be not allowed then the number of digits lying between 5000 and 10000 which can be formed by using the digits from 1 to 9 is

A. $5 \times {}^{8}P_{3}$

B. $5 \times {}^{8}C_{3}$

C. $5! \times {}^{8}P_{3}$

D. $5! \times {}^{8}C_{3}$

Answer: A

Watch Video Solution

14. Number of different four digit numbers that may be formed using each of the digits 1 2 3 4 5 6 7 and 8 only once so that the number contains 4 is

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

B. ${}^{8}C_{4}$

C. ${}^{7}C_{3}.\ 4!$

D. none of these

Answer: C

Watch Video Solution

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

A. 430

B. 36

C. 18

D. none of these

Answer: C

Watch Video Solution

16. How many different nine digit numbers can be formed from the number 22335588 by rearranging its digits so that odd digits occupy even positions 16 (b) 36 (c) 60 (d) 180

A. 16

B. 36

C. 60

D. 180

Answer: C

 Watch Video Solution

17. Five digit numbers are formed with 0 1 2 3 4 The number of numbers in which at least one digit is repeated is

A. 96

B. 120

C. 2500

D. 2404

Answer: D

 Watch Video Solution

18. Words of 5 letter are to be formed out of given 7 letters. If at least one letter is repeated, then the number of words so formed is

A. 7^5

B. 5^7

C. 14287

D. ${}^{7}P_{5}$

Answer: C

Watch Video Solution

19. Number of four digit numbers in which at least one digit occurs more than once, is :

A. 4644

B. 4356

C. 4464

D. 4536

Answer: C

Watch Video Solution

20. The number of five digit telephone numbers having at least one of their digits repeated is 90000 b. 100000 c. 30240 d. 69760

A. 90000

B. 10000

C. 30240

D. 69760

Answer: D

Watch Video Solution

21. Number of all four digit numbers having different digits formed of the digits, 1,2,3,4 and 5 and divisible by 4 is 24 b. 30 c. 125 d. 100

A. 24

B. 30

C. 125

D. 100

Answer: A

Watch Video Solution

22. A seven digit number made up of all distinct digits 8,7,6,4,2,x and y is divisible by 3. Then possible number of order pair (x,y) is

A. 4

B. 8

C. 2

D. none of these

Answer: B

Watch Video Solution

23. The number of positive integral solutions of $x_1x_2x_3x_4 = 630$ is

A. 96

B. 24

C. 48

D. 256

Answer: A

View Text Solution

24. The number of ways in which we can select four numbers from 1 to 30 so as to exclude every selection of four consecutive words is

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

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

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

D. none of these

Answer: C

Watch Video Solution

25. The number of division of $2^6 . 3^5 . 5^3 . 7^4$ 11 is equal to

A. $11^2 - 1$

B. $21^2 - 1$

C. $31^2 - 1$

D. $41^2 - 1$

Answer: D

Watch Video Solution

26. The sum of all the proper divisors of 9900 is

A. 23951

B. 23952

C. 23953

D. none of these

Answer: A

Watch Video Solution

27. The sum of the divisors of $2^5 \times 3^4 \times 5^2$, is

A. $3^2 . 7^2 . 11^2$

B. $3^2 . 7 . 11^2 . 31$

C. 3,7,11,31

D. none of these

Answer: B

Watch Video Solution

28. Number of divisors of the form $4n+2, n \geq 0$ which can divide 240 is :

A. 4

B. 8

C. 10

D. 3

Answer: A

Watch Video Solution

29. The number of divisors of 441, 1125 and 384 are in

A. A.P

B. G.P

C. H.P

D. none of these

Answer: B

Watch Video Solution

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

A. 432

B. 108

C. 36

D. 18

Answer: B

Watch Video Solution

31. The sum of all 4 digit number that can be formed by using the digits 2 ,4, 6 ,8 .

A. 133320

B. 533280

C. 53328

D. none of these

Answer: A

Watch Video Solution

32. The number of +ve integers which can be formed by using any number of digits from 0 1 2 3 4 5 but using each digit not more that once in each number is

A. 1200

B. 1500

C. 1600

D. 1630

Answer: D

Watch Video Solution

33. How many numbers greater than 1000 but not greater than 4000 can be formed with the digits 0 1 2 3 4 repetion of digits being allowed

A. 374

B. 375

C. 376

D. none of these

Answer: B

Watch Video Solution

34. How many numbers greater than 10 lacs be formed from 2,3,0,3,4,2,3? 420 b. 360 c. 400 d. 300

A. 420

B. 360

C. 400

D. 300

Answer: B

Watch Video Solution

35. A five digit number divisible by 3 is to be formed using the numerals 0, 1, 2, 3, 4 and 5, without repetition. The total number of ways this can be done, is

A. 216

B. 240

C. 600

D. 3125

Answer: A

Watch Video Solution

36. Five digit numbers divisible by 9 are to be formed by using the digits 0 1 2 3 4 7 8 The total number of such numbers is equal to

A. 216

B. 214

C. 212

D. 200

Answer: A

Watch Video Solution

37. How many even numbers are there with three digits such that if 5 is one of the digits, then 7is the next digit?

A. 360

B. 365

C. 325

D. 300

Answer: B

Watch Video Solution

38. Three digit numbers are to be formed out of natural numbers 1 to 9 so that each number has digits in increasing order from left to right. Numbers of such numbers is

A. 343

B. 84

C. 126

D. none of these

Answer: B

Watch Video Solution

39. The number of numbers greater than 23000 can be formed the digits 1 2 3 4 5

A. 90

B. 120

C. 150

D. none of these

Answer: A

Watch Video Solution

40. Howe many different numbers, greater than 50000 can be formed with eh digits 0,1,1,5,9.

A. 12

B. 24

C. 48

D. none of these

Answer: B

Watch Video Solution

41. The numbers of six digit numbers that can be formed from the digits 1 2 3 4 5 6 7 so that the digits do not repeat and the terminal digits are even is

A. 72

B. 144

C. 288

D. 720

Answer: B

Watch Video Solution

Set 3 True Of False

1. Only 24 numbers with different digits greater than 1000 can be formed from the digits 1 0 2 3.

Watch Video Solution

2. The number of positive inegers > 4000 which can be formed by the digits from 0 1 2 3 4 5 6 digit not more than once in each integer is 1200

Watch Video Solution

3. The number of natural numbers from to 1 to 1000 which have none of the digits repeated is 691.

Watch Video Solution

Set 4 Mcq

1. The number of ways that 5 student can be made to sit in a row so that the tallest and shortest may not come together is

A. 48

B. 24

C. 72

D. 120

Answer: C

Watch Video Solution

2. Ten players are to be seated in a row for photographs , so that the two particular players sit in the 2 middle seats. The

number of arrangements is

A. $9!$

B. $(9!)(2!)$

C. $2.\ (8!)$

D. none of these

Answer: C

Watch Video Solution

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

A. 25

B. 21

C. 18

D. 15

Answer: B

Watch Video Solution

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

A. ${}^4C_3 \times {}^4C_3$

B. ${}^4C_2 \times {}^4P_3$

C. ${}^4P_2 \times {}^4P_2$

D. none of these

Answer: D

Watch Video Solution

5. Three are two urns Urn A has 3 distinct red balls and urin B has 9 distinct blue balls. From each urn two balls are taken out at random and then transferred to the other. Two number of ways in which this can be done is

A. 36

B. 66

C. 108

D. 3

Answer: D

Watch Video Solution

6. Six boys and six girls sit along a line alternately in x ways, and along a circle (again alternatively) in y ways, then

A. $x=y$

B. $y=12x$

C. $x=10y$

D. $x=12y$

Answer: C

Watch Video Solution

7. 20 persons were invited for a party. The number of ways in which they and the host can be seated at a circular table such that two particular persons can be seated on either side of the host is

A. 20!

B. 19!

C. 2(18!)

D. 18!

Answer: C

Watch Video Solution

8. 10 persons are to be seated around a round table so that any two arrangements do not have same neighbourers. The number

of ways is given by

A. 9!

B. $\frac{1}{2}(10)!$

C. $\frac{1}{2}(9)!$

D. none of these

Answer: A

Watch Video Solution

9. There are 20 persons among whom are two brothers. The number of ways in which we can arrange them around a circle so that there is exactly one person between the two brothers, is

A. 2.18!

B. 2!17!

C. 19!

D. none of these

Answer: A

Watch Video Solution

10. Twelve persons are to be arranged on a round table. IF particular husband and wife refuse to sit side by side then the total no. of arrangments is

A. 9(10!)

B. 2(10!)

C. 45(8!)

D. 10!

Answer: A

Watch Video Solution

11. The number of ways in which 6 hindus and 6 muslim sits around a round table so that two hindus can never sit together is

A. 5!.6!

B. 5!.5!

C. 6!.6!

D. none of these

Answer: A

Watch Video Solution

12. The number of ways in which 6 men and 5 women can dine at a round table if no two women are to sit together is given by

A. (6!.5!)

B. 30

C. (5!.4!)

D. (7!.5!)

Answer: B

Watch Video Solution

13. Find the total number of ways in which six ' + ' and four ' − ' signs can be arranged in a line such that no two ' − ' signs occur together.

A. 30

B. 35

C. 42

D. none of these

Answer: B

Watch Video Solution

14. The number of ways of arranging m+ive signs n -ive signs ($n < m + 1$) in a row so that no two -ive signs are together is

A. ${}^{m+1}P_n$

B. ${}^{m+1}C_n$

C. ${}^{n+1}P_m$

D. ${}^{n+1}C_m$

Answer: B

Watch Video Solution

15. The number of parallelograms that can be formed form a set of four parallel lines intersecting another set of three parallel lines is 6 b. 9 c. 12 d. 18

A. 6

B. 18

C. 12

D. 9

Answer: C

Watch Video Solution

16. A parallelogram is cut by two sets of m lines parallel to its sides. The number of parallelogram then formed is

A. $({}^{m}C_{2})^{2}$

B. $\left({}^{m+1}C_{2}\right)^{2}$

C. $\left({}^{m+2}C_{2}\right)^{2}$

D. none of these

Answer: B

Watch Video Solution

17. In a plane there are two sets of parallel lines one of p lines and the other of q lines. If the lines of one set cut the other,

then the number of different paralleograms that can be formed is

A. $\frac{Pq(p-1)(q-1)}{2}$

B. $\frac{Pq(p-1)(q-1)}{4}$

C. $\frac{Pq(p-1)(q-1)}{6}$

D. none of these

Answer: B

Watch Video Solution

18. The number of rectangles excluding squares from a rectangle of 9×6 size is

A. 842

B. 791

C. 391

D. none of these

Answer: D

Watch Video Solution

19. There is a rectangular sheet of dimensions $(2m-1) \times (2n-1)$ (where $m > 0, n > 0$) It has been divided into squares of unit area by drawing lines perpendicular to the sides. Find number of rectangles having sides of odd unit length.

A. $(m+n+1)^2$

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

C. 4^{m+n-2}

D. m^2n^2

Answer: C

Watch Video Solution

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

A. 220

B. 210

C. 205

D. 200

Answer: D

Watch Video Solution

21. PQRS is a quadrilateral having 3 4 5 6 points on PQ , QR, RS and SP respectively. The number of triangles with vertices on different sides is

A. 220

B. 270

C. 282

D. none of these

Answer: D

Watch Video Solution

22. Out of 18 points in a plane no three are in the same straight line except five points which are collinear . The number of

A. 140

B. 142

C. 144

D. 146

Answer: B

Watch Video Solution

23. The number of diagonals that can be drawn by joining the vertices of an octagon is

A. 28

B. 48

C. 20

D. none of these

Answer: C

Watch Video Solution

24. The number of triangles that are formed by choosing the vertices from a set of 12 points, seven of which lie on the same straight line is

A. 105

B. 150

C. 175

D. 185

Answer: D

Watch Video Solution

25. A polygon has 44 diagonals , then the number of its sides is

A. 11

B. 7

C. 8

D. none of these

Answer: A

Watch Video Solution

26. The number of diagonals of a polygon of n sides is

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

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

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

D. none of these

Answer: B

Watch Video Solution

27. The number of triangles 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

28. There are p,q,r points on three parallel lines L_1, L_2 and L_3 all of which lie in the plane. The number of triangles which can be formed with vertices at their points is

A. ${}^{p+q+r}C_3$

B. ${}^{p+q+r}C_3 - {}^{p}C_3 - {}^{q}C_3 - {}^{r}C_3$

C. ${}^{p}C_3 + {}^{q}C_3 + {}^{r}C_3$

D. none of these

Answer: B

Watch Video Solution

29. The greatest possible number of points of intersection of 8 straight lines and 4 circles is

A. 104

B. 76

C. 64

D. 32

Answer: A

Watch Video Solution

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

A. 24

B. 28

C. 56

D. none of these

Answer: C

Watch Video Solution

31. In how many ways can 5 red and 4 white balls be drawn from a bag containing 10 red and 8 white balls

A. ${}^8C_r \times {}^{10}C_4$

B. ${}^{10}C_5 \times {}^8C_4$

C. ${}^{18}C_9$

D. none of these

Answer: B

Watch Video Solution

32. The number of committees of 5 persons consisting of at least one female number, that can be formed from 6 males and 4 females, is

A. 246

B. 252

C. 6

D. none of these

Answer: A

Watch Video Solution

33. Out of 6 boys and 4 girls a group of 7 is to be formed , In how many ways can this be done if the group is to have a majority of boys?

A. 90

B. 100

C. 120

D. 180

Answer: B

Watch Video Solution

34. The number of ways in which a team of eleven players can be selected from from 22 players so that 2 particular players are always included and 4 naughty boys are excluded is

A. ${}^{16}C_9$

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

C. ${}^{20}C_9$

D. ${}^{20}C_5$

Answer: A

Watch Video Solution

35. The number of ways in which a commiitte of 5 can be chosen from 10 candidates so as to exclude the youngest if it includes the oldest.

A. 178

B. 196

C. 202

D. none of these

Answer: B

 Watch Video Solution

36. From 4 officers and 8 jawans a committee of 6 is to be chosen to include exactly one officier. The number of such committees is

A. 160

B. 200

C. 224

D. 300

Answer: C

Watch Video Solution

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

A. 1700

B. 1720

C. 1728

D. 1736

Answer: C

Watch Video Solution

38. The number of ways in which we can choose a committee from four men and six women, so that the committee includes atleast two men and exactly twice as many women as men is

A. 94

B. 126

C. 128

D. none of these

Answer: A

Watch Video Solution

39. A committee of 5 members is to be selected from among 6 boys and 5 girls. Determine the number of ways of selecting the committee if it is to consist of at least one boy and one girl.

A. 455

B. 350

C. 305

D. none of these

Answer: A

Watch Video Solution

40. A committee of 6 is chosen from 10 men and 7 women so as to contain at least 3 men and 2 women. In how many ways can

this be done if two particular women refuse to serve on the same committee? a. 850 b. 8700 c. 7800 d. none of these

A. 8610

B. 8100

C. 7800

D. none of these

Answer: C

Watch Video Solution

41. A candidate is required to answer 6 out of 10 questions, which are divide into two groups, each containing 5 questions. He is not permitted to attempt more than 4 questions from

either group. The number of different ways in which the candidate can choose 6 questions is a. 50 b. 150 c. 200 d. 250

A. 150

B. 200

C. 250

D. 300

Answer: B

Watch Video Solution

42. A student is to answer 10 out of 13 questions in an examination such that the he must choose t least 4 from the first five questions. The number of choices available to him are (A) 346 (B) 140 (C) 196 (D) 280

A. 140

B. 196

C. 280

D. 346

Answer: B

Watch Video Solution

43. A candidate is required to answer 7 questions out of 12 questions which are divided into two groups each containing 6 questions. He is not permitted to attempt more than 5 questions from either group. The number of ways in which he can choose the 7 questions is

A. 650

B. 780

C. 720

D. none of these

Answer: B

 Watch Video Solution

44. From 6 different novels and 3 different dictionaries, 4 novels and 1 dictionary are to be selected and arranged in a row on a shelf so that the dictionary is always in the middle. Then the number of such arrangements is (1) less than 500 (2) at least 500 but less than 750 (3) at least 750 but less than 1000 (4) at least 1000

A. at least 1000

B. less than 500

C. at least 500 but less than 750

D. at least 750 but less than 1000

Answer: B

Watch Video Solution

45. A candidate is required to answer 7 out of 15 questions which are divided into three groups A B C each containing 4 5 6 question respectively. He is required to select at least 2 questions from each group. He can make up his choice in

A. 1200

B. 2700

C. 2000

D. none of these

Answer: B

Watch Video Solution

46. The number of all the possible selections which a student can make for answering one or more questions out of eight given questions in a paper, when each question has an altrenative, is

A. 6561

B. 6560

C. 256

D. none of these

Answer: B

Watch Video Solution

47. There are n different books and p copies of each in a library. Find the number of ways in which one or more than one books can be selected.

A. $m^n - 1$

B. $(m+1)^n - 1$

C. $(m+n)^n - m$

D. none of these

Answer: B

Watch Video Solution

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

A. 210

B. 420

C. 840

D. none of these

Answer: B

Watch Video Solution

49. Six players are to play doubles Tennis match. IF every possible player must play with every other possible player, then the number of matches to be played is

A. 30

B. 45

C. 60

D. 90

Answer: B

Watch Video Solution

50. There are n students in a class and a group of three is taken by class teacher to APPU ghar. The same set of three children is not taken more than once. It is found that she goes to Appu ghar 84 times more than the visit of a particular child , then the value of n is

A. 10

B. 12

C. 60

D. none of these

Answer: A

Watch Video Solution

51. Out of 16 players of a cricket team, 4 are bowlers and 2 are wicket keepers. A team of 11 players is to be chosen so as to contain at least 3 bowlers and at least 1 wicket keeper. The number of ways in which the team be selected is

A. 2400

B. 2472

C. 2500

D. 960

Answer: A

Watch Video Solution

52. A lady gives a dinner party for five guests. The number of ways in which they may be selected from among nine friends if two of the friends will not attend the party together is

A. 91

B. 112

C. 119

D. none of these

Answer: A

Watch Video Solution

53. A set contains (2n+1) elements . IF the number of subsets of this set which contain at most n elements is 4096, then n is equal to

A. 5

B. 6

C. 7

D. 8

Answer: B

Watch Video Solution

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

A. 2

B. 3

C. 4

D. none of these

Answer: A

Watch Video Solution

55. There are 2n things out of which n are alike and n different. The number of ways of selecting n things is

A. 2^n

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

C. $2^n - 1$

D. $2^n\left({}^{2n}C_n\right)$

Answer: A

Watch Video Solution

56. The number of ways that a garland can be made out of 6 red and 5 white roses so that no two white roses come together is

A. 21600

B. 43200

C. 40320

D. 5040

Answer: B

Watch Video Solution

57. The number of ways that a garland can be made out of 6 red and 4 white roses of different sizes so that all the white roses come together is .....

A. 4320

B. 8640

C. 17280

D. 1440

Answer: D

Watch Video Solution

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

A. 4!4!

B. $\frac{8!}{4!}$

C. 288

D. $\frac{1}{2}4!4!$

Answer: B

Watch Video Solution

59. The number of ways in which three letters be posted in four letter boxes in a village if all the three letters are not posted in the same letter box is

A. 64

B. 60

C. 81

D. 78

Answer: B

Watch Video Solution

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

A. 64

B. 62

C. 60

D. 30

Answer: B

Watch Video Solution

61. There are 4 oranges, 5 apples and 6 mangoes in a fruit basket. In how manyways can a person make a selection of fruits from among the fruits in the basket?

A. 210

B. 209

C. 208

D. none of these

Answer: B

Watch Video Solution

62. If some or all of n objects are taken at a time, then the number of combinations is $2^n - 1$.

A. 2^n

B. $2^n - 1$

C. $2^n + 1$

D. none of these

Answer: B

Watch Video Solution

63. In a steamer there are stalls for 12 animals and there are cows, horses and calves (not less than 12 of each) ready to be shipped, the total number of ways in which the shipload can be made, is

A. 3^{12}

B. $(12)^3$

C. $3^{12} - 1$

D. none of these

Answer: A

 Watch Video Solution

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

A. $7!.5!$

B. $4!.6!$

C. $6!.6!$

D. none of these

Answer: A

Watch Video Solution

65. Given 5 different green dyes, four different blue dyes and three different red dyes, the number of combination of dyes

which can be chosen taking at least one green and one blue dye is

A. 3600

B. 3720

C. 3800

D. none of these

Answer: B

Watch Video Solution

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

A. 64

B. 84

C. 128

D. none of these

Answer: A

 Watch Video Solution

67. Twelve students complete for a race. The number of ways in which first three prizes can be taken is

A. $(12)!-3$

B. $(12)!3!$

C. $3!$

D. $12.11.10$

Answer: D

Watch Video Solution

68. The number of ways in which the following prizes be given to a class of 20 boys, first and second mathematics, first and second physics , first chemistry and first english is

A. $20^4 \times 19^2$

B. $20^3 \times 19^3$

C. $20^2 \times 19^4$

D. none of these

Answer: A

Watch Video Solution

69. The number of ways in which 5 prizes can be distributed among 4 boys when every boy can take one or more prizes is

A. 1024

B. 625

C. 120

D. 600

Answer: A

Watch Video Solution

70. Each question in a question paper has four choices for its answer out of which only one is correct. A candidate is to answer three questions. The number of ways he fails to give all answer correct is

A. 64

B. 60

C. 61

D. 63

Answer: D

 Watch Video Solution

71. What is the number of signals that can be sent by 6 flags of different colours taking one or more at a time?

A. 63

B. 1956

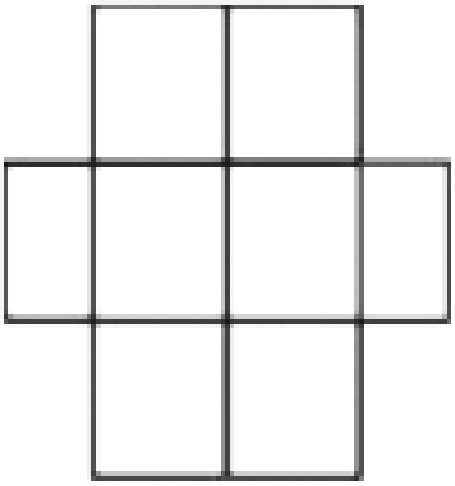
C. 720

D. none of these

Answer: B

Watch Video Solution

72. Six X have to be placed in the squares of figure such that each row contains at least one X. The number of ways in which this can be done is:



A. 26

B. 27

C. 22

D. none of these

Answer: A

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73. A code word consists of three letters of the English alphabet followed by two digits of the decimal system. If neither letter nor digit is repeated in any code word, then the total number of code words, is

A. 1404000

B. 16848000

C. 2808000

D. none of these

Answer: A

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74. Eleven books consisting of 5 mathematics, 4 physics and 2 on chemistry are placed on a shelf at random. The number of possible ways of arranging them on the assumption that the books on the same subject are all together is

A. $4!.2!$

B. $11!$

C. $5!4!2!3!$

D. none of these

Answer: C

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75. Show that the number of ways in which p positive and n negative signs may be placed in a row so that no two negative signs shall be together is ˆ $(p+1)C_n$.

A. ${}^{N}C_n$

B. ${}^{N+1}C_n$

C. $(N)!$

D. ${}^{N+1}P_n$

Answer: B

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76. Five persons including one lady are to deliver lectures to an audience. The organiser can arrange the lecture so that the lady is always in the middle in

A. 120 ways

B. 96 ways

C. 24 ways

D. 5 ways

Answer: C

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77. If eight persons are to address a meeting, then the number of ways in which a specified speaker is to speak before another specified speaker, is

A. $8!$

B. $\frac{1}{2}(8!)$

C. $6!$

D. none of these

Answer: B

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78. In a certain city, all telephone numbers have six digits, the first two digits always being 41 or 42 or 46 or 62 or 64. How many telephone numbers have all six digits distinct ?

A. 7200

B. 8400

C. 9200

D. none of these

Answer: B

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79. In a town, the car plate numbers contain only three or four digits, not containing the dit 0. What is the maximum numbers of cars that can be numbered?

A. 5882

B. 6480

C. 7290

D. none of these

Answer: C

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80. The letters of the word COCHIN are permuted and all the permutations are arranged in an alphabetical order s in an English dictionary. The number of words that appear before the word COCHIN is a.360 b. 192 c. 96 d. 48

A. 360

B. 192

C. 96

D. 48

Answer: C

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Set 4 True Or False

1. To fill 12 vacancies there are 25 candidates of which 5 are from scheduled castes. If 3 of the vacancies are reserved for scheduled caste candidates while the rest are open to all, the number of ways in which the selection can be made is ${}^{5}C_{3} \times {}^{20}C_{9}$.

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

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3. If there are n student and r prizes $(r < n)$ They can be given away

in n^r ways when a student can receive any number of prizes. True or False.

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4. If there are n student and r prizes $(r < n)$ They can be given away

$n^r - n$ ways when a student cannot receive all the prizes.True or False?

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5. There will be only 24 selections containing at least one red ball out of a bag containing 4 red and 5 black balls. It being given that the balls of the same colour are identical.True False ?

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6. Show that the total number of permutations of n different things takenn not more than r at a time, when each thing may be repated any number of times is $\frac{n(n^r-1)}{(n-1)}$.

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Set 4 Fill In The Blanks

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

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2. In how many ways can 7 boys be seated at a round table so that two particular boys are next to each other

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3. In how many ways can 7 boys be seated at a round table so that two particular boys are separated

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4. There are 2 white, 3 black and 4 red balls. The number of ways in which these balls can be arranged so that no two red balls may occupy consecutive positions is given by..... The balls of some colour are identical.

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5. There are 12 points in a plane of which 5 points are collinear, then the number of lines obtained by joining these points in pairs is ${}^{12}C_2 - {}^{5}C_2$.

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6. There are 12 points in a plane of which 5 are collinear.

The number of triangles that can be formed with vertices at thest points is.....

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7. In how many ways 5 rings of different tyhpes can be worn in 4 fingers?

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8. in how many way can a peak of 52 cards be divided equally among four players in order ?

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9. In how many ways can a pack of 52 cards be formed into 4 groups of 13 cards each

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

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11. In how many ways can 10 balls be divided between two boys, one receiving two and the other eight balls

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12. Sixteen men compete with one another in running, swimming and riding. How many prize lists could be made if there were altogether 6 prizes of different values , one for running 2 for swimming and 3 for riding?

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13. At an election meeting 10 speakers are to address the meeting. The only protocol to be observed is that whenever they speak PM will speak before MP and MP will speaks before MLA. The number of ways in which the meeting be addressed is...

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Assertion Reason

1. 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 ${}^{9}C_{3}$.

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Self Assessment Test

1. $\sum_{r=0}^{m} {}^{n+r}C_n$ is equal to

A. ${}^{n+m+1}C_{n+1}$

B. ${}^{n+m+2}C_n$

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

D. none of these

Answer: A

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2. A polygon has 44 diagonals , then the number of its sides is

A. 11

B. 7

C. 8

D. none of these

Answer: A

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3. If 7 points out of 12 are in the same straight line, then what is the number of triangles formed?

A. 19

B. 185

C. 201

D. none of these

Answer: B

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4. All the letters of the word EAMCET are arranged in all possible ways. The number of such arrangements in which no two vowels ar adjacent to each other is

A. 360

B. 144

C. 72

D. 54

Answer: C

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5. Out of 10 red and 8 white balls , 5 red and 4 white balls can be drawn in number of ways

A. ${}^{8}C_{5} \times {}^{10}C_{4}$

B. ${}^{10}C_{5} \times {}^{8}C_{4}$

C. ${}^{18}C_{8}$

D. none of these

Answer: B

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6. 7 men and 7 women are to sit round a table so that there is a man on either side of a woman. The number of seating

arrangement is

A. $(7!)^2$

B. $(6!)^2$

C. $6!.7!$

D. $7!$

Answer: C

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7. The number of seven digit integers with sum of the digits equal to 10 and formed by using the digits 1 ,2 and 3 only is

A. 55

B. 66

C. 77

D. 88

Answer: C

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8. The total number of ways in which 5 balls of differ- ent colours can be distributed among 3 persons so that each person gets atleast one ball is

A. 75

B. 150

C. 210

D. 243

Answer: B

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9. 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 (1) 880 (2) 629 (3) 630 (4) 879

A. 880

B. 629

C. 630

D. 879

Answer: D

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10. How many different words can be formed by jumbling the letters of the word 'MISSISSIPPI' in which no two S are together ?

A. $6.7.{}^{8}C_4$

B. $6.8.{}^{7}C_4$

C. $7.{}^{6}C_4.{}^{6}C_4$

D. $8.{}^{6}C_4.{}^{6}C_4$

Answer: C

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

A. 20

B. 18

C. 12

D. 130

Answer: B

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12. How many words can be formed with the letters o the word MATHEMATICS by rearranging them.

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

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

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

D. none of these

Answer: C

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13. In how many ways 7 men and 7 women can sit on a round table such that no two women sit together

A. $(6!)^2$

B. $7! \times 6!$

C. $(7!)^2$

D. $7!$

Answer: B

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14. If $\hat{} \ 15C_{3r} = {}^{15} C_{r+3}$, then find r.

A. 3

B. 4

C. 5

D. 6

Answer: A

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15. IF ${}^{n}C_{12} = {}^{n}C_{6}$ then ${}^{n}C_{2}$=

A. 82

B. 153

C. 206

D. 256

Answer: B

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16. There are n points in a place in which p point are collinear. How many lines can be formed from these points

A. ${}^{n-p}C_2$

B. ${}^{n}C_2$

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

D. none of these

Answer: C

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17. There are 10 points in a plane, out of these 6 are collinear. The number of triangles formed by joining these points, is

A. 100

B. 150

C. 200

D. 300

Answer: A

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18. IF x,y,r are positive integers then

$${}^{x}C_{r} + {}^{x}C_{r-1}.{}^{y}C_{1} + {}^{x}C_{r-2}{}^{y}C_{2} + \ldots\ldots + {}^{y}C_{r} =$$

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

B. $\frac{(x+y)!}{2}$

C. ${}^{x+y}C_r$

D. none of these

Answer: C

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19. A dictionary is printed consisting of 7 lettered words only that can be made with letters of the word "CRICKET". If the words are printed in the alphabetical order, as in the ordinary dictionary, then the number of words before the word CRICKET, is

A. 530

B. 630

C. 430

D. 330

Answer: A

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20. Let T_n be the number of all possible triangles formed by joining vertices of an n-sided regular polygon. If $T_{n+1} - T_n = 10$, then the value of n is (1) 5 (2) 10 (3) 8 (4) 7

A. 7

B. 5

C. 10

D. 8

Answer: B