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MATHEMATICS · JEE MAIN

Permutations & Combinations

Previous Year Questions with answers

239 questions · **177** papers · **2002–2026** · newest paper first

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What is in this PDF: every Permutations & Combinations question we hold from past JEE Main and AIEEE papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

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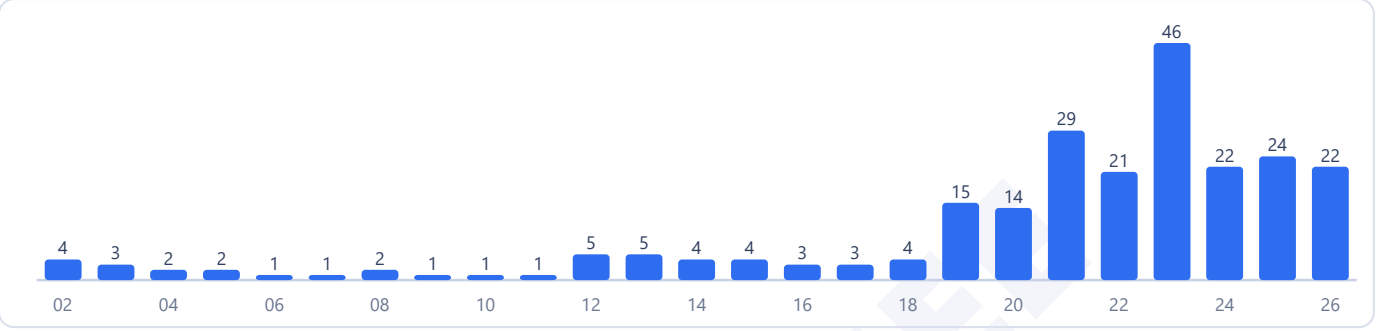
Chapter at a glance

4.2%	239	141 of 162	139 / 100
of Mathematics questions, 2019–2026	questions, 2002–2026	papers asked it, 2019–2026	MCQ / numerical, 2002–2026

Trend. Steady: 1.2 questions per paper in 2024–2026 against 1.2 in 2019–2023.

Questions per year



Counts are the questions we hold: 239 in 177 papers. 2 questions in this chapter came back in more than one paper.

Most-asked topics in this chapter (2002–2026)



How often it comes up

Permutations and combinations develops discrete counting methods under Unit 4: Permutations and Combinations in the Class 11 curriculum, capturing rank 10 of 29 chapters with a 4.2% share of the mathematics section. During the 2019 to 2026 testing cycle, Permutations & Combinations accounted for 193 questions across 162 exam papers, making up 4.2% of the mathematics section and capturing rank 10 of 29 chapters. In the earlier 2002 to 2018 testing span, it registered 46 questions across 38 papers with a 3.5% share. Across recent 2024 to 2026 sessions, it yielded 68 questions across 58 papers, accounting for a 4.4% share. Comparing 2002 to 2018 against 2024 to 2026, the trend is up, whereas comparing 2019 to 2026 against 2024 to 2026, its testing share has remained about the same.

The chapter has appeared every year from 2019 to 2026. Across 2019 to 2026, students faced an average of 1.2 questions per paper, consistent with the 1.2 questions per paper recorded in the 2024 to 2026 timeframe. The chapter is an extraordinary source of numerical value questions: exactly 100 numerical answer questions were set between 2019 and 2026.

Most-asked topics

The syllabus organizes across four major counting areas:

- Permutations: The leading topic with 75 total questions (59 in 2019 to 2026), evaluated continuously through 2026. Covers arrangement of words with repeated letters, dictionary ranking of words with and without duplicates, gap method and tie (bundle) method for conditional arrangements, and digit permutations under divisibility constraints.
- Combinations: Contributed 68 total questions (56 in 2019 to 2026), tested through 2026. Explores selecting teams or committees under gender or group restrictions, geometric counts (lines, triangles, and pentagons formed from points on intersecting lines), and subsets satisfying parity or divisibility properties.

- Distributions & Advanced Counting: Generated 48 total questions (42 in 2019 to 2026), active through 2026. Focuses on distributing identical objects into distinct bins using stars and bars ((n + r - 1)C(r - 1)), distributing distinct objects, non-negative integer solutions to linear equations, and derangements.
- Counting Principles: Produced 48 total questions (36 in 2019 to 2026), active through 2026. Examines multiplication rules, Legendre's formula finding the highest power of a prime p dividing n! via floor summations, and modular arithmetic selections.

What the questions look like

Examiners present intricate word problems requiring case-by-case categorization. A prominent pattern asks candidates to form four-digit or five-digit numbers using a restricted set of digits such that the resulting number is divisible by three, four, or six, demanding careful modular residue grouping.

Another major question style involves word formation from collections containing repeated letters (like P, P, P, Q, Q, R, R), where students must partition cases by selection types (all different, two alike and two different, two pairs alike, or three alike) before applying multinomial arrangement formulas.

How to practise it

Prepare for permutations and combinations through systematic case branching and algebraic identities:

1. Classify multi-set selections systematically: When choosing r items from a set with repetitions, branch into distinct cases based on multiplicity patterns before arranging. 2. Master identical object distribution: The number of non-negative integer solutions to x1 + x2 + ... + xr = n is (n + r - 1)C(r - 1). For strictly positive integers, substitute yi = xi - 1 to get (n - 1)C(r - 1). 3. Apply Legendre's formula accurately: The highest power of prime p dividing n! equals the sum of floor(n / p^k) for k >= 1. For composite bases like 40 = 2^3 * 5, evaluate prime factors separately and take the bottleneck minimum. 4. Distinguish gap method from tie method: When items must never be adjacent, seat the unrestricted items first and place the constrained items into the available gaps; when items must remain together, tie them into a single super-element. 5. Practise modular residue grouping: When counting numbers divisible by 3, classify available digits into sets of remainder 0, remainder 1, and remainder 2 mod 3 before selecting valid combinations.

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Q1 JEE Main 2026 · 6 Apr · Shift 1 MCQ

The number of 4-letter words, with or without meaning, each consisting of two vowels and two consonants that can be formed from the letters of the word INCONSEQUENTIAL, without repeating any letter, is:

(A) 2670
(B) 2840
(C) 2920
(D) 3600

Answer: (D) 3600 · Official NTA final key

Q2 JEE Main 2026 · 6 Apr · Shift 2 MCQ

A building has ground floor and 10 more floors. Nine persons enter in a lift at the ground floor. The lift goes up to the 10th floor. The number of ways, in which any 4 persons exit at a floor and the remaining 5 persons exit at a different floor, if the lift does not stop at the first and the second floors, is equal to :

(A) 2184
(B) 3064
(C) 7056
(D) 11340

Answer: (C) 7056 · Official NTA final key

Q3 JEE Main 2026 · 5 Apr · Shift 1 Numerical

Two players A and B play a series of games of badminton. The player, who wins 5 games first, wins the series. Assuming that no game ends in a draw, the number of ways, in which player A wins the series is _____.

Numerical value type: the answer is a number.

Answer: 126. · Official NTA final key

Q4 JEE Main 2026 · 5 Apr · Shift 2 MCQ

A box contains 5 blue, 6 yellow and 4 red balls. The number of ways, of drawing 8 balls containing at least two balls of each colour, is :

(A) 4100
(B) 4140
(C) 4230
(D) 4290

Answer: (A) 4100 · Official NTA final key

Q5 JEE Main 2026 · 4 Apr · Shift 1 MCQ

The number of ways, of forming a queue of 4 boys and 3 girls such that all the girls are not together, is:

(A) 5040
(B) 3050
(C) 3410
(D) 4320

Answer: (D) 4320 · Official NTA final key

Q6 JEE Main 2026 · 4 Apr · Shift 2 MCQ

Let

$A = \{(a, b, c) : a, b, c \text{ are non-negative integers and } a + b + 2c = 22\}$.

Then $n(A)$ is equal to:

(A) 121
(B) 124
(C) 144
(D) 169

Answer: (C) 144 · Official NTA final key

Q7 JEE Main 2026 · 2 Apr · Shift 1 MCQ

The number of seven-digit numbers, that can be formed by using the digits 1, 2, 3, 5 and 7 such that each digit is used at least once, is :

(A) 15400
(B) 17800
(C) 16800
(D) 29400

Answer: (C) 16800 · Official NTA final key

Q8 JEE Main 2026 · 2 Apr · Shift 1 MCQ

The number of elements in the set $S = \left\{(r, k) : k \in \mathbf{Z} \text{ and } {}^{36}C_{r+1} = \frac{6\left({}^{35}C_r\right)}{(k^2-3)}\right\}$, is :

(A) 2
(B) 4
(C) 8
(D) 16

Answer: (B) 4 · Official NTA final key

Q9 JEE Main 2026 · 2 Apr · Shift 2 MCQ

Let p_n denote the total number of triangles formed by joining the vertices of an n-side regular polygon. If $p_{n+1} - p_n = 66$, then the sum of all distinct prime divisors of n is :

(A) 7
(B) 8
(C) 5
(D) 6

Answer: (C) 5 · Official NTA final key

Q10 JEE Main 2026 · 28 Jan · Shift 1 MCQ

Let $S = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$. Let x be the number of 9-digit numbers formed using the digits of the set S such that only one digit is repeated and it is repeated exactly twice. Let y be the number of 9-digit numbers formed using the digits of the set S such that only two digits are repeated and each of these is repeated exactly twice. Then,

(A) $21x = 4y$
(B) $45x = 7y$
(C) $56x = 9y$
(D) $29x = 5y$

Answer: (A) $21x = 4y$ · Official NTA final key

Q11 JEE Main 2026 · 28 Jan · Shift 2 Numerical

Three persons enter in a lift at the ground floor. The lift will go upto 10th floor. The number of ways, in which the three persons can exit the lift at three different floors, if the lift does not stop at first, second and third floors, is equal to _____.

Numerical value type: the answer is a number.

Answer: 210. · Official NTA final key

Q12 JEE Main 2026 · 24 Jan · Shift 1 Numerical

The number of numbers greater than 5000, less than 9000 and divisible by 3, that can be formed using the digits 0, 1, 2, 5, 9, if the repetition of the digits is allowed, is _____.

Numerical value type: the answer is a number.

Answer: 42. · Official NTA final key

Q13 JEE Main 2026 · 24 Jan · Shift 2 MCQ

The largest value of n, for which 40^n divides $60!$, is

(A) 13
(B) 11
(C) 14
(D) 12

Answer: (C) 14 · Official NTA final key

Q14 JEE Main 2026 · 24 Jan · Shift 2 MCQ

The letters of the word "UDAYPUR" are written in all possible ways with or without meaning and these words are arranged as in a dictionary. The rank of the word "UDAYPUR" is

(A) 1578
(B) 1579
(C) 1580
(D) 1581

Answer: (C) 1580 · Official NTA final key

Q15 JEE Main 2026 · 23 Jan · Shift 1 Numerical

The number of 4-letter words, with or without meaning, which can be formed using the letters PQRPQRSTUVP, is _____.

Numerical value type: the answer is a number.

Answer: 1422. · Official NTA final key

Q16 JEE Main 2026 · 23 Jan · Shift 2 MCQ

The number of ways, in which 16 oranges can be distributed to four children such that each child gets at least one orange, is

(A) 403
(B) 384
(C) 429
(D) 455

Answer: (D) 455 · Official NTA final key

Q17 JEE Main 2026 · 23 Jan · Shift 2 Numerical

Let S denote the set of 4-digit numbers $abcd$ such that $a > b > c > d$ and P denote the set of 5-digit numbers having product of its digits equal to 20. Then $n(\mathrm{S}) + n(\mathrm{P})$ is equal to _____.

Numerical value type: the answer is a number.

Answer: 260. · Official NTA final key

Q18 JEE Main 2026 · 22 Jan · Shift 1 Numerical

Let ABC be a triangle. Consider four points $\mathrm{p}_1, \mathrm{p}_2, \mathrm{p}_3, \mathrm{p}_4$ on the side AB, five points $\mathrm{p}_5, \mathrm{p}_6, \mathrm{p}_7, \mathrm{p}_8, \mathrm{p}_9$ on the side BC, and four points $\mathrm{p}_{10}, \mathrm{p}_{11}, \mathrm{p}_{12}, \mathrm{p}_{13}$ on the side AC. None of these points is a vertex of the triangle ABC. Then the total number of pentagons, that can be formed by taking all the vertices from the points $\mathrm{p}_1, \mathrm{p}_2, \cdots, \mathrm{p}_{13}$, is _____.

Numerical value type: the answer is a number.

Answer: 660. · Official NTA final key

Q19 JEE Main 2026 · 22 Jan · Shift 2 Numerical

Let S be the set of the first 11 natural numbers. Then the number of elements in $\mathrm{A} = \{\mathrm{B} \subseteq \mathrm{S} : n(\mathrm{B}) \geq 2 \text{ and the product of all elements of B is even}\}$ is _____.

Numerical value type: the answer is a number.

Answer: 1979. · Official NTA final key

Q20 JEE Main 2026 · 21 Jan · Shift 1 Numerical

Let $S = \{(m, n) : m, n \in \{1, 2, 3, \ldots, 50\}\}$. If the number of elements (m, n) in S such that $6^m + 9^n$ is a multiple of 5 is p and the number of elements (m, n) in S such that $m + n$ is a square of a prime number is q, then $p + q$ is equal to _____.

Numerical value type: the answer is a number.

Answer: 1333. · Official NTA final key

Q21 JEE Main 2026 · 21 Jan · Shift 2 MCQ

The largest $n \in \mathbf{N}$, for which 7^n divides $101!$, is :

(A) 15
(B) 19
(C) 16
(D) 18

Answer: (C) 16 · Official NTA final key

Q22 JEE Main 2026 · 21 Jan · Shift 2 Numerical

If $\left(\frac{1}{{}^{15}C_0}+\frac{1}{{}^{15}C_1}\right)\left(\frac{1}{{}^{15}C_1}+\frac{1}{{}^{15}C_2}\right)\cdots\left(\frac{1}{{}^{15}C_{12}}+\frac{1}{{}^{15}C_{13}}\right)=\frac{\alpha^{13}}{{}^{14}C_0\,{}^{14}C_1\cdots{}^{14}C_{12}}$, then 30α is equal to _____.

Numerical value type: the answer is a number.

Answer: 32. · Official NTA final key

Q23 JEE Main 2025 · 8 Apr · Shift 2 MCQ

There are 12 points in a plane, no three of which are in the same straight line, except 5 points which are collinear. Then the total number of triangles that can be formed with the vertices at any three of these 12 points is

(A) 230
(B) 200
(C) 210
(D) 220

Answer: (C) 210 · Key from source paper

Q24 JEE Main 2025 · 7 Apr · Shift 1 MCQ

From a group of 7 batsmen and 6 bowlers, 10 players are to be chosen for a team, which should include atleast 4 batsmen and atleast 4 bowlers. One batsmen and one bowler who are captain and vice-captain respectively of the team should be included. Then the total number of ways such a selection can be made, is

(A) 135
(B) 145
(C) 155
(D) 165

Answer: (C) 155 · Key from source paper

Q25 JEE Main 2025 · 7 Apr · Shift 1 Numerical

For $n \geq 2$, let S_n denote the set of all subsets of $\{1, 2, \ldots, n\}$ with no two consecutive numbers. For example $\{1, 3, 5\} \in S_6$, but $\{1, 2, 4\} \notin S_6$. Then $n(S_5)$ is equal to _____ .

Numerical value type: the answer is a number.

Answer: 13. · Key from source paper

Q26 JEE Main 2025 · 7 Apr · Shift 2 MCQ

Let p be the number of all triangles that can be formed by joining the vertices of a regular polygon P of n sides and q be the number of all quadrilaterals that can be formed by joining the vertices of P. If

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$p+q=126$, then the eccentricity of the ellipse $\frac{x^2}{16}+\frac{y^2}{n}=1$ is :

(A) $\frac{\sqrt{7}}{4}$

(B) $\frac{1}{2}$

(C) $\frac{1}{\sqrt{2}}$

(D) $\frac{3}{4}$

Answer: (C) $\frac{1}{\sqrt{2}}$ · Key from source paper

Q27 JEE Main 2025 · 4 Apr · Shift 2 Numerical

Let m and n $(m<n)$, be two 2-digit numbers. Then the total numbers of pairs (m,n), such that $\gcd(m,n)=6$, is _____ .

Numerical value type: the answer is a number.

Answer: 64. · Key from source paper

Q28 JEE Main 2025 · 3 Apr · Shift 1 Numerical

All five letter words are made using all the letters A, B, C, D, E and arranged as in an English dictionary with serial numbers. Let the word at serial number n be denoted by W_n. Let the probability $P(W_n)$ of choosing the word W_n satisfy $P(W_n)=2P(W_{n-1}), n>1$.

If $P(CDBEA)=\frac{2^{\alpha}}{2^{\beta}-1}, \alpha,\beta\in\square$, then $\alpha+\beta$ is equal to : _____

Numerical value type: the answer is a number.

Answer: 183. · Key from source paper

Q29 JEE Main 2025 · 3 Apr · Shift 1 Numerical

If the number of seven-digit numbers, such that the sum of their digits is even, is

$m\cdot n\cdot 10^n; m,n\in\{1,2,3,\ldots,9\}$, then $m+n$ is equal to _____

Numerical value type: the answer is a number.

Answer: 14. · Key from source paper

Q30 JEE Main 2025 · 3 Apr · Shift 2 MCQ

Line L_1 of slope 2 and line L_2 of slope $\frac{1}{2}$ intersect at the origin O. In the first quadrant, $P_1,P_2,\ldots,P_{12}$ are 12 points on line L_1 and $Q_1,Q_2,\ldots,Q_9$ are 9 points on line L_2. Then the total number of triangles, that can be formed having vertices at three of the 22 points $O,P_1,P_2,\ldots,P_{12},Q_1,Q_2,\ldots,Q_9$, is:

(A) 1134
(B) 1188
(C) 1080
(D) 1026

Answer: (A) 1134 · Key from source paper

Q31 JEE Main 2025 · 2 Apr · Shift 1 MCQ

The number of sequences of ten terms, whose terms are either 0 or 1 or 2 , that contain exactly five 1 s and exactly three 2 s , is equal to :

(A) 360
(B) 2520
(C) 1820
(D) 45

Answer: (B) 2520 · Key from source paper

Q32 JEE Main 2025 · 2 Apr · Shift 1 MCQ

The largest $n \in N$ such that 3^n divides 50 ! is :

(A) 23
(B) 21
(C) 22
(D) 20

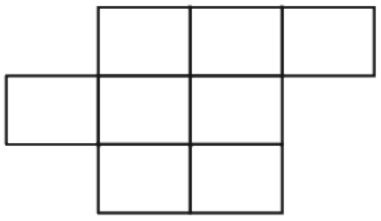
Answer: (C) 22 · Key from source paper

Q33 JEE Main 2025 · 2 Apr · Shift 2 MCQ

The number of ways, in which the letters A, B, C, D, E can be placed in the 8 boxes of the figure below so that no row remains empty and at most one letter can be placed in a box, is :

(see the figure above)

6. The number of ways, in which the letters A, B, C, D, E can be placed in the 8 boxes of the figure below so that no row remains empty and at most one letter can be placed in a box, is :



(1) 5880 (2) 840 (3) 960 (4) 5760

(A) 5880
(B) 840
(C) 960
(D) 5760

Answer: (D) 5760 · Key from source paper

Q34 JEE Main 2025 · 29 Jan · Shift 1 MCQ

Let P be the set of seven digit numbers with sum of their digits equal to 11 . If the numbers in P are formed by using the digits 1,2 and 3 only, then the number of elements in the set P is :

(A) 173
(B) 164
(C) 158
(D) 161

Answer: (D) 161 · Key from source paper

Q35 JEE Main 2025 · 29 Jan · Shift 1 Numerical

The number of 6-letter words, with or without meaning, that can be formed using the letters of the word MATHS such that any letter that appears in the word must appear at least twice, is _____ .

Numerical value type: the answer is a number.

Answer: 1405. · Key from source paper

Q36 JEE Main 2025 · 29 Jan · Shift 2 MCQ

If all the words with or without meaning made using all the letters of the word "KANPUR" are arranged as in a dictionary, then the word at 440th position in this arrangement, is :

(A) PRNAUK
(B) PRKANU
(C) PRKAUN
(D) PRNAKU

Answer: (C) PRKAUN · Key from source paper

Q37 JEE Main 2025 · 28 Jan · Shift 1 MCQ

The number of different 5 digit numbers greater than 50000 that can be formed using the digits 0 , 1, 2, 3, 4, 5, 6, 7, such that the sum of their first and last digits should not be more than 8 , is

(A) 4608
(B) 5720
(C) 5719
(D) 4607

Answer: (D) 4607 · Key from source paper

Q38 JEE Main 2025 · 28 Jan · Shift 2 Numerical

The number of natural numbers, between 212 and 999 , such that the sum of their digits is 15 , is _____ .

Numerical value type: the answer is a number.

Answer: 64. · Key from source paper

Q39 JEE Main 2025 · 24 Jan · Shift 1 Numerical

Let $S=\{p_1, p_2, ..., p_{10}\}$ be the set of first ten prime numbers. Let $A=S \cup P$, where P is the set of all possible products of distinct elements of S. Then the number of all ordered pairs (x, y), $x \in S, y \in A$, such that x divides y, is _____ .

Numerical value type: the answer is a number.

Answer: 5120. · Key from source paper

Q40 JEE Main 2025 · 24 Jan · Shift 1 Numerical

The number of 3 -digit numbers, that are divisible by 2 and 3 , but not divisible by 4 and 9 , is _____ .

Numerical value type: the answer is a number.

Answer: 125. · Key from source paper

Q41 JEE Main 2025 · 24 Jan · Shift 2 MCQ

Group A consists of 7 boys and 3 girls, while group B consists of 6 boys and 5 girls. The number of ways, 4 boys and 4 girls can be invited for a picnic if 5 of them must be from group A and the remaining 3 from group B, is equal to :

(A) 8750
(B) 9100
(C) 8925
(D) 8575

Answer: (C) 8925 · Key from source paper

Q42 JEE Main 2025 · 23 Jan · Shift 1 MCQ

The number of words, which can be formed using all the letters of the word "DAUGHTER", so that all the vowels never come together, is

(A) 36000
(B) 37000
(C) 34000
(D) 35000

Answer: (A) 36000 · Key from source paper

Q43 JEE Main 2025 · 23 Jan · Shift 2 Numerical

The number of ways, 5 boys and 4 girls can sit in a row so that either all the boys sit together or no two boys sit together, is -

Numerical value type: the answer is a number.

Answer: 17280. · Key from source paper

Q44 JEE Main 2025 · 22 Jan · Shift 1 MCQ

From all the English alphabets, five letters are chosen and are arranged in alphabetical order. The total number of ways, in which the middle letter is ' M ', is :

(A) 5148
(B) 6084
(C) 4356
(D) 14950

Answer: (A) 5148 · Key from source paper

Q45 JEE Main 2025 · 22 Jan · Shift 1 MCQ

Let $A = \{1, 2, 3, \ldots, 10\}$ and $B = \left\{\frac{m}{n} : m, n \in A, m < n \text{ and } \gcd(m, n) = 1\right\}$. Then $n(B)$ is equal to :

(A) 36
(B) 31
(C) 37
(D) 29

Answer: (B) 31 · Key from source paper

Q46 JEE Main 2025 · 22 Jan · Shift 2 MCQ

In a group of 3 girls and 4 boys, there are two boys B_1 and B_2. The number of ways, in which these girls and boys can stand in a queue such that all the girls stand together, all the boys stand together, but B_1 and B_2 are not adjacent to each other, is :

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(A) 96
(B) 144
(C) 120
(D) 72

Answer: (B) 144 · Key from source paper

Q47 JEE Main 2024 · 9 Apr · Shift 2 Numerical

The number of integers, between 100 and 1000 having the sum of their digits equals to 14 , is _____

Numerical value type: the answer is a number.

Answer: 70. · Key from source paper

Q48 JEE Main 2024 · 8 Apr · Shift 1 Numerical

The number of 3-digit numbers, formed using the digits 2, 3, 4, 5 and 7 , when the repetition of digits is not allowed, and which are not divisible by 3 , is equal to _____

Numerical value type: the answer is a number.

Answer: 36. · Key from source paper

Q49 JEE Main 2024 · 8 Apr · Shift 2 MCQ

The number of ways five alphabets can be chosen from the alphabets of the word MATHEMATICS, where the chosen alphabets are not necessarily distinct, is equal to :

(A) 179
(B) 177
(C) 181
(D) 175

Answer: (A) 179 · Key from source paper

Q50 JEE Main 2024 · 6 Apr · Shift 1 MCQ

The number of triangles whose vertices are at the vertices of a regular octagon but none of whose sides is a side of the octagon is

(A) 48
(B) 56
(C) 24
(D) 16

Answer: (D) 16 · Key from source paper

Q51 JEE Main 2024 · 6 Apr · Shift 2 MCQ

Let $0 \leq r \leq n$. If ${}^{n+1}C_{r+1} : {}^{n}C_{r} : {}^{n-1}C_{r-1} = 55 : 35 : 21$, then $2n + 5r$ is equal to:

(A) 50
(B) 62
(C) 55
(D) 60

Answer: (A) 50 · Key from source paper

Q52 JEE Main 2024 · 6 Apr · Shift 2 MCQ

If all the words with or without meaning made using all the letters of the word "NAGPUR" are arranged as in a dictionary, then the word at 315th position in this arrangement is :

(A) NRAGUP
(B) NRAPUG
(C) NRAPGU
(D) NRAGPU

Answer: (C) NRAPGU · Key from source paper

Q53 JEE Main 2024 · 5 Apr · Shift 1 Numerical

The number of ways of getting a sum 16 on throwing a dice four times is _____

Numerical value type: the answer is a number.

Answer: 125. · Key from source paper

Q54 JEE Main 2024 · 5 Apr · Shift 2 MCQ

60 words can be made using all the letters of the word BHBJO, with or without meaning. If these words are written as in a dictionary, then the 50th word is :

(A) JBBOH
(B) OBBJH
(C) OBBHJ
(D) HBBJO

Answer: (B) OBBJH · Key from source paper

Q55 JEE Main 2024 · 5 Apr · Shift 2 MCQ

Let the set $S = \{2, 4, 8, 16, \ldots, 512\}$ be partitioned into 3 sets A, B, C with equal number of elements such that $A \cup B \cup C = S$ and $A \cap B = B \cap C = A \cap C = \phi$. The maximum number of such possible partitions of S is equal to:

(A) 1680
(B) 1640
(C) 1520
(D) 1710

Answer: (A) 1680 · Key from source paper

Q56 JEE Main 2024 · 4 Apr · Shift 1 MCQ

There are 5 points P_1, P_2, P_3, P_4, P_5 on the side AB, excluding A and B, of a triangle ABC. Similarly there are 6 points $\mathrm{P}_6, \mathrm{P}_7, \ldots, \mathrm{P}_{11}$ on the side BC and 7 points $\mathrm{P}_{12}, \mathrm{P}_{13}, \ldots, \mathrm{P}_{18}$ on the side CA of the triangle. The number of triangles, that can be formed using the points $\mathrm{P}_1, \mathrm{P}_2, \ldots, \mathrm{P}_{18}$ as vertices, is :

(A) 776
(B) 796
(C) 751
(D) 771

Answer: (C) 751 · Key from source paper

Q57 JEE Main 2024 · 4 Apr · Shift 2 Numerical

There are 4 men and 5 women in Group A, and 5 men and 4 women in Group B. If 4 persons are selected from each group, then the number of ways of selecting 4 men and 4 women is _____

Numerical value type: the answer is a number.

Answer: 5626. · Key from source paper

Q58 JEE Main 2024 · 1 Feb · Shift 1 MCQ

If n is the number of ways five different employees can sit into four indistinguishable offices where any office may have any number of persons including zero, then n is equal to:

(A) 47
(B) 53
(C) 51
(D) 43

Answer: (C) 51 · Key from source paper

Q59 JEE Main 2024 · 1 Feb · Shift 1 Numerical

The number of elements in the set $S = x, y, z : x, y, z \in Z, x + 2y + 3z = 42, x, y, z \geq 0$ equals _____

Numerical value type: the answer is a number.

Answer: 169. · Key from source paper

Q60 JEE Main 2024 · 1 Feb · Shift 2 Numerical

The lines $L_1, L_2, ..., L_{20}$ are distinct. For $n = 1, 2, 3, ..., 10$ all the lines L_{2n-1} are parallel to each other and all the lines L_{2n} pass through a given point P. The maximum number of points of intersection of pairs of lines from the set $L_1, L_2, ..., L_{20}$ is equal to:

Numerical value type: the answer is a number.

Answer: 101. · Key from source paper

Q61 JEE Main 2024 · 31 Jan · Shift 1 Numerical

The total number of words (with or without meaning) that can be formed out of the letters of the word "DISTRIBUTION" taken four at a time, is equal to _____.

Numerical value type: the answer is a number.

Answer: 3734. · Key from source paper

Q62 JEE Main 2024 · 31 Jan · Shift 2 MCQ

The number of ways in which 21 identical apples can be distributed among three children such that each child gets at least 2 apples, is

(A) 406
(B) 130
(C) 142
(D) 136

Answer: (D) 136 · Key from source paper

Q63 JEE Main 2024 · 31 Jan · Shift 2 MCQ

If for some m, n; ${}^6C_m + 2\,{}^6C_{m+1} + {}^6C_{m+2} > {}^8C_3$ and ${}^{n-1}P_3 : {}^nP_4 = 1 : 8$, then ${}^nP_{m+1} + {}^{n+1}C_m$ is equal to

(A) 380
(B) 376
(C) 384
(D) 372

Answer: (D) 372 · Key from source paper

Q64 JEE Main 2024 · 30 Jan · Shift 2 Numerical

In an examination of Mathematics paper, there are 20 questions of equal marks and the question paper is divided into three sections : A, B and C. A student is required to attempt total 15 questions taking at least 4 questions from each section. If section A has 8 questions, section B has 6 questions and section C has 6 questions, then the total number of ways a student can select 15 questions is _____.

Numerical value type: the answer is a number.

Answer: 11376. · Key from source paper

Q65 JEE Main 2024 · 29 Jan · Shift 1 Numerical

All the letters of the word $GTWENTY$ are written in all possible ways with or without meaning and these words are written as in a dictionary. The serial number of the word $GTWENTY$ IS

Numerical value type: the answer is a number.

Answer: 553. · Key from source paper

Q66 JEE Main 2024 · 29 Jan · Shift 2 MCQ

Number of ways of arranging 8 identical books into 4 identical shelves where any number of shelves may remain empty is equal to

(A) 18
(B) 16
(C) 12
(D) 15

Answer: (D) 15 · Key from source paper

Q67 JEE Main 2024 · 27 Jan · Shift 1 MCQ

${}^{n-1}C_r = (k^2 - 8)\,{}^nC_{r+1}$ if and only if :

(A) $2\sqrt{2} < k \leq 3$
(B) $2\sqrt{3} < k \leq 3\sqrt{2}$
(C) $2\sqrt{3} < k < 3\sqrt{3}$
(D) $2\sqrt{2} < k < 2\sqrt{3}$

Answer: (A) $2\sqrt{2} < k \leq 3$ · Key from source paper

Q68 JEE Main 2024 · 27 Jan · Shift 2 MCQ

Let $\alpha = \frac{(4!)!}{(4!)^{3!}}$ and $\beta = \frac{(5!)!}{(5!)^{4!}}$. Then :

(A) $\alpha \in N$ and $\beta \notin N$
(B) $\alpha \notin N$ and $\beta \in N$
(C) $\alpha \in N$ and $\beta \in N$
(D) $\alpha \notin N$ and $\beta \notin N$

Answer: (C) $\alpha \in N$ and $\beta \in N$ · Key from source paper

Q69 JEE Main 2023 · 15 Apr · Shift 1 MCQ

The total number of three-digit numbers, divisible by 3, which can be formed using the digits 1, 3, 5, 8, if repetition of digits is allowed, is

(A) 21
(B) 20
(C) 22
(D) 18

Answer: (C) 22 · Key from source paper

Q70 JEE Main 2023 · 15 Apr · Shift 1 Numerical

A person forgets his 4-digit ATM pin code. But he remembers that in the code all the digits are different, the greatest digit is 7 and the sum of the first two digits is equal to the sum of the last two digits. Then the maximum number of trials necessary to obtain the correct code is _____.

Numerical value type: the answer is a number.

Answer: 72. · Key from source paper

Q71 JEE Main 2023 · 13 Apr · Shift 1 Numerical

The number of seven digit positive integers formed using the digits 1, 2, 3 and 4 only and sum of the digits equal to 12 is _____.

Numerical value type: the answer is a number.

Answer: 413. · Key from source paper

Q72 JEE Main 2023 · 13 Apr · Shift 2 MCQ

All words, with or without meaning, are made using all the letters of the word $MONDAY$. These words are written as in a dictionary with serial numbers. The serial number of the word $MONDAY$ is

(A) 327
(B) 328
(C) 324
(D) 326

Answer: (A) 327 · Key from source paper

Q73 JEE Main 2023 · 13 Apr · Shift 2 Numerical

Total numbers of 3-digit numbers that are divisible by 6 and can be formed by using the digits 1, 2, 3, 4, 5 with repetition, is _____

Numerical value type: the answer is a number.

Answer: 16. · Key from source paper

Q74 JEE Main 2023 · 12 Apr · Shift 1 MCQ

The number of five-digit numbers, greater than 40000 and divisible by 5, which can be formed using the digits 0, 1, 3, 5, 7 and 9 without repetition, is equal to

(A) 132
(B) 120
(C) 72
(D) 96

Answer: (B) 120 · Key from source paper

Q75 JEE Main 2023 · 11 Apr · Shift 1 MCQ

The number of triplets x, y, z where x, y, z are distinct non negative integers satisfying $x + y + z = 15$, is

(A) 80
(B) 136
(C) 114
(D) 92

Answer: (C) 114 · Key from source paper

Q76 JEE Main 2023 · 11 Apr · Shift 1 Numerical

In an examination, 5 students have been allotted their seats as per their roll numbers. The number of ways, in which none of the students sits on the allotted seat, is

Numerical value type: the answer is a number.

Answer: 44. · Key from source paper

Q77 JEE Main 2023 · 11 Apr · Shift 2 MCQ

If the letters of the word MATHS are permuted and all possible words so formed are arranged as in a dictionary with serial numbers, then the serial number of the word THAMS is

(A) 103
(B) 102
(C) 101
(D) 104

Answer: (A) 103 · Key from source paper

Q78 JEE Main 2023 · 10 Apr · Shift 1 Numerical

The number of permutations, of the digits $1, 2, 3, \ldots, 7$ without repetition, which neither contain the string 153 nor the string 2467, is _____.

Numerical value type: the answer is a number.

Answer: 4898. · Key from source paper

Q79 JEE Main 2023 · 10 Apr · Shift 1 Numerical

Some couples participated in a mixed doubles badminton tournament. If the number of matches played, so that no couple played in a match, is 840, then the total numbers of persons, who participated in the tournament, is _____.

Numerical value type: the answer is a number.

Answer: 16. · Key from source paper

Q80 JEE Main 2023 · 10 Apr · Shift 2 MCQ

Eight persons are to be transported from city A to city B in three cars of different makes. If each car can accommodate at most three persons, then the number of ways, in which they can be transported, is

(A) 1120
(B) 3360
(C) 1680
(D) 560

Answer: (C) 1680 · Key from source paper

Q81 JEE Main 2023 · 10 Apr · Shift 2 Numerical

The sum of all the four-digit numbers that can be formed using all the digits $2, 1, 2, 3$ is equal to _____.

Numerical value type: the answer is a number.

Answer: 26664. · Key from source paper

Q82 JEE Main 2023 · 8 Apr · Shift 1 MCQ

The number of arrangements of the letters of the word "INDEPENDENCE" in which all the vowels always occur together is

(A) 16800
(B) 33600
(C) 18000
(D) 14800

Answer: (A) 16800 · Key from source paper

Q83 JEE Main 2023 · 8 Apr · Shift 1 MCQ

The number of ways, in which 5 girls and 7 boys can be seated at a round table so that no two girls sit together is

(A) 720
(B) $126(5!)^2$
(C) $7(360)^2$
(D) $7(720)^2$

Answer: (B) $126(5!)^2$ · Key from source paper

Q84 JEE Main 2023 · 8 Apr · Shift 1 Numerical

The largest natural number n such that $3n$ divides $66!$ is _____

Numerical value type: the answer is a number.

Answer: 31. · Key from source paper

Q85 JEE Main 2023 · 8 Apr · Shift 2 MCQ

If the number of words, with or without meaning. which can be made using all the letters of the word MATHEMATICS in which C and S do not come together, is $(6!)k$ then k is equal to

(A) 2835
(B) 5670
(C) 1890
(D) 945

Answer: (B) 5670 · Key from source paper

Q86 JEE Main 2023 · 6 Apr · Shift 1 MCQ

If ${}^{2n}C_3 : {}^{n}C_3 = 10 : 1$, then the ratio $n^2 + 3n : n^2 - 3n + 4$ is

(A) $35 : 16$
(B) $27 : 11$
(C) $65 : 37$
(D) $2 : 1$

Answer: (D) $2 : 1$ · Key from source paper

Q87 JEE Main 2023 · 6 Apr · Shift 1 Numerical

The number of ways of giving 20 distinct oranges to 3 children such that each child gets at least one orange is _____

Numerical value type: the answer is a number.

Answer: 3483638676. · Checked by our team

Q88 JEE Main 2023 · 6 Apr · Shift 2 MCQ

All the letters of the word PUBLIC are written in all possible orders and these words are written as in a dictionary with serial numbers. Then the serial number of the word PUBLIC is

(A) 576
(B) 578
(C) 580
(D) 582

Answer: (D) 582 · Key from source paper

Q89 JEE Main 2023 · 6 Apr · Shift 2 Numerical

The number of 4-letter words, with or without meaning, each consisting of 2 vowels and 2 consonants, which can be formed from the letters of the word UNIVERSE without repetition is _____ .

Numerical value type: the answer is a number.

Answer: 432. · Key from source paper

Q90 JEE Main 2023 · 1 Feb · Shift 1 Numerical

The number of words, with or without meaning, that can be formed using all the letters of the word ASSASSINATION so that the vowels occur together, is _____.

Numerical value type: the answer is a number.

Answer: 50400. · Key from source paper

Q91 JEE Main 2023 · 1 Feb · Shift 1 Numerical

The number of 3-digit numbers, that are divisible by either 2 or 3 but not divisible by 7 is _____.

Numerical value type: the answer is a number.

Answer: 514. · Key from source paper

Q92 JEE Main 2023 · 1 Feb · Shift 2 Numerical

Number of integral solutions to the equation $x + y + z = 21$, where $x \geq 1, y \geq 3, z \geq 4$, is equal to _____.

Numerical value type: the answer is a number.

Answer: 105. · Key from source paper

Q93 JEE Main 2023 · 1 Feb · Shift 2 Numerical

The total number of six digit numbers, formed using the digits 4, 5, 9 only and divisible by 6, is _____.

Numerical value type: the answer is a number.

Answer: 81. · Key from source paper

Q94 JEE Main 2023 · 31 Jan · Shift 1 Numerical

Let 5 digit numbers be constructed using the digits 0, 2, 3, 4, 7, 9 with repetition allowed, and are arranged in ascending order with serial numbers. Then the serial number of the number 42923 is _____.

Numerical value type: the answer is a number.

Answer: 2997. · Key from source paper

Q95 JEE Main 2023 · 31 Jan · Shift 1 Numerical

Number of 4-digit numbers that are less than or equal to 2800 and either divisible by 3 or by 11 , is equal to _____.

Numerical value type: the answer is a number.

Answer: 710. · Key from source paper

Q96 JEE Main 2023 · 31 Jan · Shift 2 Numerical

If $^{2n+1}P_{n-1} : {}^{2n-1}P_n = 11 : 21$, then $n^2 + n + 15$ is equal to :

Numerical value type: the answer is a number.

Answer: 45. · Key from source paper

Q97 JEE Main 2023 · 31 Jan · Shift 2 Numerical

Let $A = |a_{ij}| \cdot a_{ij} \in Z \cap [0, 4], 1 \leq i, j \leq 2$. The number of matrices A such that the sum of all entries is a prime number $p \in (2, 13)$ is _____ .

Numerical value type: the answer is a number.

Answer: 204. · Key from source paper

Q98 JEE Main 2023 · 30 Jan · Shift 1 Numerical

Number of 4-digit numbers (the repetition of digits is allowed) which are made using the digits 1, 2, 3 and 5, and are divisible by 15, is equal to

Numerical value type: the answer is a number.

Answer: 21. · Key from source paper

Q99 JEE Main 2023 · 30 Jan · Shift 2 MCQ

The number of ways of selecting two numbers a and b, $a \in \{2, 4, 6, \ldots\ldots, 100\}$ and $b \in \{1, 3, 5, \ldots\ldots, 99\}$ such that 2 is the remainder when $a + b$ is divided by 23 is

(A) 186
(B) 54
(C) 108
(D) 268

Answer: (C) 108 · Key from source paper

Q100 JEE Main 2023 · 30 Jan · Shift 2 Numerical

The number of seven digits odd numbers, that can be formed using all the seven digits 1, 2, 2, 2, 3, 3, 5 is

Numerical value type: the answer is a number.

Answer: 240. · Key from source paper

Q101 JEE Main 2023 · 29 Jan · Shift 1 Numerical

If all the six digit numbers $x_1x_2x_3x_4x_5x_6$ with $0 < x_1 < x_2 < x_3 < x_4 < x_5 < x_6$ are arranged in the increasing order, then the sum of the digits in the 72th number is _____ .

Numerical value type: the answer is a number.

Answer: 32. · Key from source paper

Q102 JEE Main 2023 · 29 Jan · Shift 1 Numerical

Five digit numbers are formed using the digits $1, 2, 3, 5, 7$ with repetitions and are written in descending order with serial numbers. For example, the number 77777 has serial number 1. Then the serial number of 35337 is

Numerical value type: the answer is a number.

Answer: 1436. · Key from source paper

Q103 JEE Main 2023 · 29 Jan · Shift 2 MCQ

The letters of the word OUGHT are written in all possible ways and these words are arranged as in a dictionary, in a series. Then the serial number of the word TOUGH is :

(A) 89
(B) 84
(C) 86
(D) 79

Answer: (A) 89 · Key from source paper

Q104 JEE Main 2023 · 29 Jan · Shift 2 Numerical

The total number of 4-digit numbers whose greatest common divisor with 54 is 2 , is

Numerical value type: the answer is a number.

Answer: 3000. · Key from source paper

Q105 JEE Main 2023 · 29 Jan · Shift 2 MCQ

The number of 3 digit numbers, that are divisible by either 3 or 4 but not divisible by 48 , is

(A) 472
(B) 432
(C) 507
(D) 400

Answer: (B) 432 · Key from source paper

Q106 JEE Main 2023 · 25 Jan · Shift 1 Numerical

Let x and y be distinct integers where $1 \leq x \leq 25$ and $1 \leq y \leq 25$. Then, the number of ways of choosing x and y, such that $x + y$ is divisible by 5 , is _____ .

Numerical value type: the answer is a number.

Answer: 120. · Key from source paper

Q107 JEE Main 2023 · 25 Jan · Shift 1 Numerical

Let $S = \{1, 2, 3, 5, 7, 10, 11\}$. The number of non-empty subsets of S that have the sum of all elements a multiple of 3, is _____ .

Numerical value type: the answer is a number.

Answer: 43. · Key from source paper

Q108 JEE Main 2023 · 25 Jan · Shift 2 MCQ

The number of numbers, strictly between 5000 and 10000 can be formed using the digits 1, 3, 5, 7, 9 without repetition, is

(A) 6
(B) 12
(C) 120
(D) 72

Answer: (D) 72 · Key from source paper

Q109 JEE Main 2023 · 25 Jan · Shift 2 Numerical

Suppose Anil's mother wants to give 5 whole fruits to Anil from a basket of 7 red apples, 5 white apples and 8 oranges. If in the selected 5 fruits, at least 2 orange, at least one red apple and at least one white apple must be given, then the number of ways, Anil's mother can offer 5 fruits to Anil is _____ .

Numerical value type: the answer is a number.

Answer: 6860. · Key from source paper

Q110 JEE Main 2023 · 25 Jan · Shift 2 MCQ

$\sum_{k=0}^{6} {}^{51-k}C_3$ is equal to

(A) ${}^{51}C_4 - {}^{45}C_4$

(B) ${}^{51}C_3 - {}^{45}C_3$

(C) ${}^{52}C_4 - {}^{45}C_4$

(D) ${}^{52}C_3 - {}^{45}C_3$

Answer: (C) ${}^{52}C_4 - {}^{45}C_4$ · Key from source paper

Q111 JEE Main 2023 · 24 Jan · Shift 1 Numerical

A boy needs to select five courses from 12 available courses, out of which 5 courses are language courses. If he can choose at most two language courses, then the number of ways he can choose five courses is

Numerical value type: the answer is a number.

Answer: 546. · Key from source paper

Q112 JEE Main 2023 · 24 Jan · Shift 1 Numerical

The number of 9 digit numbers, that can be formed using all the digits of the number 123412341 so that the even digits occupy only even places, is _____

Numerical value type: the answer is a number.

Answer: 60. · Key from source paper

Q113 JEE Main 2023 · 24 Jan · Shift 2 MCQ

The number of integers, greater than 7000 that can be formed, using the digits 3, 5, 6, 7, 8 without repetition is

(A) 120
(B) 168
(C) 220
(D) 48

Answer: (B) 168 · Key from source paper

Q114 JEE Main 2023 · 24 Jan · Shift 2 MCQ

The number of square matrices of order 5 with entries from the set $\{0, 1\}$, such that the sum of all the elements in each row is 1 and the sum of all the elements in each column is also 1, is

(A) 225
(B) 120
(C) 150
(D) 125

Answer: (B) 120 · Key from source paper

Q115 JEE Main 2022 · 29 Jul · Shift 1 Numerical

The number of matrices of order 3×3, whose entries are either 0 or 1 and the sum of all the entries is a prime number, is _____.

Numerical value type: the answer is a number.

Answer: 282. · Key from source paper

Q116 JEE Main 2022 · 29 Jul · Shift 2 Numerical

The number of natural numbers lying between 1012 and 23421 that can be formed using the digits 2, 3, 4, 5, 6 (repetition of digits is not allowed) and divisible by 55 is _____.

Numerical value type: the answer is a number.

Answer: 6. · Key from source paper

Q117 JEE Main 2022 · 28 Jul · Shift 1 Numerical

Let S be the set of all passwords which are six to eight characters long, where each character is either an alphabet from A, B, C, D, E or a number from $1, 2, 3, 4, 5$ with the repetition of characters allowed. If the number of passwords in S whose at least one character is a number from $1, 2, 3, 4, 5$ is $\alpha \times 5^6$, then α is equal to

Numerical value type: the answer is a number.

Answer: 7073. · Key from source paper

Q118 JEE Main 2022 · 28 Jul · Shift 2 Numerical

A class contains b boys and g girls. If the number of ways of selecting 3 boys and 2 girls from the class is 168, then $b + 3g$ is equal to

Numerical value type: the answer is a number.

Answer: 17. · Key from source paper

Q119 JEE Main 2022 · 26 Jul · Shift 1 Numerical

The number of 5-digit natural numbers, such that the product of their digits is 36, is

Numerical value type: the answer is a number.

Answer: 180. · Key from source paper

Q120 JEE Main 2022 · 26 Jul · Shift 2 Numerical

Numbers are to be formed between 1000 and 3000, which are divisible by 4, using the digits 1, 2, 3, 4, 5 and 6 without repetition of digits. Then the total number of such numbers is _____ .

Numerical value type: the answer is a number.

Answer: 30. · Key from source paper

Q121 JEE Main 2022 · 25 Jul · Shift 1 Numerical

The letters of the word 'MANKIND' are written in all possible orders and arranged in serial order as in an English dictionary. Then the serial number of the word 'MANKIND' is _____.

Numerical value type: the answer is a number.

Answer: 1492. · Key from source paper

Q122 JEE Main 2022 · 29 Jun · Shift 1 Numerical

Let $b_1b_2b_3b_4$ be a 4-element permutation with $b_i \in \{1, 2, 3, ..., 100\}$ for $1 \le i \le 4$ and $b_i \ne b_j$ for $i \ne j$, such that either $b_1,\ b_2,\ b_3$ are consecutive integers or $b_2,\ b_3,\ b_4$ are consecutive integers. Then the number of such permutations $b_1b_2b_3b_4$ is equal to _____.

Numerical value type: the answer is a number.

Answer: 18915. · Key from source paper

Q123 JEE Main 2022 · 29 Jun · Shift 2 Numerical

The total number of four digit numbers such that each of the first three digits is divisible by the last digit, is equal to _____.

Numerical value type: the answer is a number.

Answer: 1086. · Key from source paper

Q124 JEE Main 2022 · 28 Jun · Shift 1 MCQ

The total number of 5-digit numbers, formed by using the digits $1, 2, 3, 5, 6, 7$ without repetition, which are multiple of 6, is

(A) 72
(B) 48
(C) 24
(D) 60

Answer: (A) 72 · Key from source paper

Q125 JEE Main 2022 · 28 Jun · Shift 2 MCQ

The number of ways to distribute 30 identical candies among four children C_1, C_2, C_3 and C_4 so that C_2 receives atleast 4 and atmost 7 candies, C_3 receives atleast 2 and atmost 6 candies, is equal to

(A) 205
(B) 615
(C) 510
(D) 430

Answer: (D) 430 · Key from source paper

Q126 JEE Main 2022 · 27 Jun · Shift 1 Numerical

The number of ways, 16 identical cubes, of which 11 are blue and rest are red, can be placed in a row so that between any two red cubes there should be at least 2 blue cubes, is _____ .

Numerical value type: the answer is a number.

Answer: 56. · Key from source paper

Q127 JEE Main 2022 · 27 Jun · Shift 2 Numerical

Let A be a matrix of order 2×2, whose entries are from the set $\{0, 1, 2, 3, 4, 5\}$. If the sum of all the entries of A is a prime number p, $2 < p < 8$, then the number of such matrices A is

Numerical value type: the answer is a number.

Answer: 180. · Key from source paper

Q128 JEE Main 2022 · 26 Jun · Shift 1 Numerical

There are ten boys $B_1, B_2, \ldots, B_{10}$ and five girls $G_1, G_2, \ldots G_5$ in a class. Then the number of ways forming a group consisting of three boys and three girls, if both B_1 and B_2 together should not be the members of a group, is _____ .

Numerical value type: the answer is a number.

Answer: 1120. · Key from source paper

Q129 JEE Main 2022 · 26 Jun · Shift 2 Numerical

The total number of 3-digit numbers, whose greatest common divisor with 36 is 2, is _____ .

Numerical value type: the answer is a number.

Answer: 150. · Key from source paper

Q130 JEE Main 2022 · 25 Jun · Shift 1 Numerical

The number of 3-digit odd numbers, whose sum of digits is a multiple of 7, is _____ .

Numerical value type: the answer is a number.

Answer: 63. · Key from source paper

Q131 JEE Main 2022 · 25 Jun · Shift 1 Numerical

Let A be a 3×3 matrix having entries from the set $-1, 0, 1$. The number of all such matrices A having sum of all the entries equal to 5, is _____

Numerical value type: the answer is a number.

Answer: 414. · Key from source paper

Q132 JEE Main 2022 · 25 Jun · Shift 2 Numerical

The total number of three-digit numbers, with one digit repeated exactly two times, is _____ .

Numerical value type: the answer is a number.

Answer: 243. · Key from source paper

Q133 JEE Main 2022 · 24 Jun · Shift 1 Numerical

In an examination, there are 5 multiple choice questions with 3 choices, out of which exactly one is correct. There are 3 marks for each correct answer, -2 marks for each wrong answer and 0 mark if the question is not attempted. Then, the number of ways a student appearing in the examination gets 5 marks is _____

Numerical value type: the answer is a number.

Answer: 40. · Key from source paper

Q134 JEE Main 2022 · 24 Jun · Shift 2 Numerical

The number of 7-digit numbers which are multiples of 11 and are formed using all the digits $1, 2, 3, 4, 5, 7$ and 9 is _____ .

Numerical value type: the answer is a number.

Answer: 576. · Key from source paper

Q135 JEE Main 2022 · 24 Jun · Shift 2 Numerical

The sum of all the elements of the set $\{\alpha \in \{1, 2, \ldots..100\} : HCF(\alpha, 24) = 1\}$ is

Numerical value type: the answer is a number.

Answer: 1633. · Key from source paper

Q136 JEE Main 2021 · 1 Sep · Shift 2 MCQ

Let P_1, $P_2 \ldots$, P_{15} be 15 points on a circle. The number of distinct triangles formed by points P_i, P_j, P_k such that $i + j + k \neq 15$, is :

(A) 455
(B) 419
(C) 12
(D) 443

Answer: (D) 443 · Key from source paper

Q137 JEE Main 2021 · 1 Sep · Shift 2 Numerical

All the arrangements, with or without meaning, of the word FARMER are written excluding any word that has two R appearing together. The arrangements are listed serially in the alphabetic order as in the English dictionary. Then the serial number of the word FARMER in this list is _____.

Numerical value type: the answer is a number.

Answer: 77. · Key from source paper

Q138 JEE Main 2021 · 31 Aug · Shift 1 Numerical

The number of six letter words (with or without meaning), formed using all the letters of the word 'VOWELS', so that all the consonants never come together, is _____

Numerical value type: the answer is a number.

Answer: 576. · Key from source paper

Q139 JEE Main 2021 · 27 Aug · Shift 1 Numerical

A number is called a palindrome if it reads the same backward as well as forward. For example 285582 is a six digit palindrome. The number of six digit palindromes, which are divisible by 55, is _____.

Numerical value type: the answer is a number.

Answer: 100. · Key from source paper

Q140 JEE Main 2021 · 27 Aug · Shift 2 Numerical

Let $S = \{1, 2, 3, 4, 5, 6, 9\}$. Then the number of elements in the set $T = \{A \subseteq S : A \neq \phi$ and the sum of all the elements of A is not a multiple of $3\}$ is

Numerical value type: the answer is a number.

Answer: 80. · Key from source paper

Q141 JEE Main 2021 · 26 Aug · Shift 1 Numerical

The number of three-digit even numbers, formed by the digits $0, 1, 3, 4, 6, 7$ if the repetition of digits is not allowed, is _____.

Numerical value type: the answer is a number.

Answer: 52. · Key from source paper

Q142 JEE Main 2021 · 26 Aug · Shift 1 Numerical

If ${}^{1}P_1 + 2 \cdot {}^{2}P_2 + 3 \cdot {}^{3}P_3 + \ldots + 15 \cdot {}^{15}P_{15} = {}^{q}P_r - s$, $0 \leq s \leq 1$, then ${}^{q+s}C_{r-s}$ is equal to

Numerical value type: the answer is a number.

Accepted answers: 136 or 680. · Key from source paper

Q143 JEE Main 2021 · 26 Aug · Shift 2 Numerical

The sum of all 3-digit numbers less than or equal to 500, that are formed without using the digit 1 and they all are multiple of 11, is _____.

Numerical value type: the answer is a number.

Answer: 7744. · Key from source paper

Q144 JEE Main 2021 · 27 Jul · Shift 2 Numerical

Let n be a non-negative integer. Then the number of divisors of the form $4n + 1$ of the number $(10)^{10} \cdot (11)^{11} \cdot (13)^{13}$ is equal to _____.

Numerical value type: the answer is a number.

Answer: 924. · Key from source paper

Q145 JEE Main 2021 · 25 Jul · Shift 1 Numerical

There are 5 students in class 10, 6 students in class 11 and 8 students in class 12. If the number of ways, in which 10 students can be selected from them so as to include at least 2 students from each class and at most 5 students from the total 11 students of class 10 and 11 is $100k$, then k is equal to

Numerical value type: the answer is a number.

Answer: 238. · Key from source paper

Q146 JEE Main 2021 · 25 Jul · Shift 1 Numerical

Let $M = A = \begin{pmatrix} a & b \\ c & d \end{pmatrix} : a, b, c, d \in \pm 3, \pm 2, \pm 1, 0$. Define $f : M \to Z$, as $fA = \det A$, for all $A \in M$ where Z is set of all integers. Then the number of $A \in M$ such that $fA = 15$ is equal to _____.

Numerical value type: the answer is a number.

Answer: 16. · Key from source paper

Q147 JEE Main 2021 · 25 Jul · Shift 2 MCQ

If ${}^{n}P_{r} = {}^{n}P_{r+1}$ and ${}^{n}C_{r} = {}^{n}C_{r-1}$, then the value of r is equal to:

(A) 1
(B) 4
(C) 2
(D) 3

Answer: (C) 2 · Key from source paper

Q148 JEE Main 2021 · 22 Jul · Shift 1 Numerical

If the digits are not allowed to repeat in any number formed by using the digits $0, 2, 4, 6, 8$, then the number of all numbers greater than $10,000$ is equal to _____.

Numerical value type: the answer is a number.

Answer: 96. · Key from source paper

Q149 JEE Main 2021 · 22 Jul · Shift 1 Numerical

The sum of all the elements in the set $\{n \in \{1, 2, \ldots\ldots, 100\} \mid \text{H.C.F. of } n \text{ and } 2040 \text{ is } 1\}$ is equal to _____.

Numerical value type: the answer is a number.

Answer: 1251. · Key from source paper

Q150 JEE Main 2021 · 20 Jul · Shift 1 Numerical

There are 15 players in a cricket team, out of which 6 are bowlers, 7 are batsmen and 2 are wicketkeepers. The number of ways, a team of 11 players be selected from them so as to include at least 4 bowlers, 5 batsmen and 1 wicketkeeper, is

Numerical value type: the answer is a number.

Answer: 777. · Key from source paper

Q151 JEE Main 2021 · 18 Mar · Shift 1 MCQ

The sum of all the 4-digit distinct numbers that can be formed with the digits 1, 2, 2 and 3 is:

(A) 26664
(B) 122664
(C) 122234
(D) 22264

Answer: (A) 26664 · Key from source paper

Q152 JEE Main 2021 · 18 Mar · Shift 1 Numerical

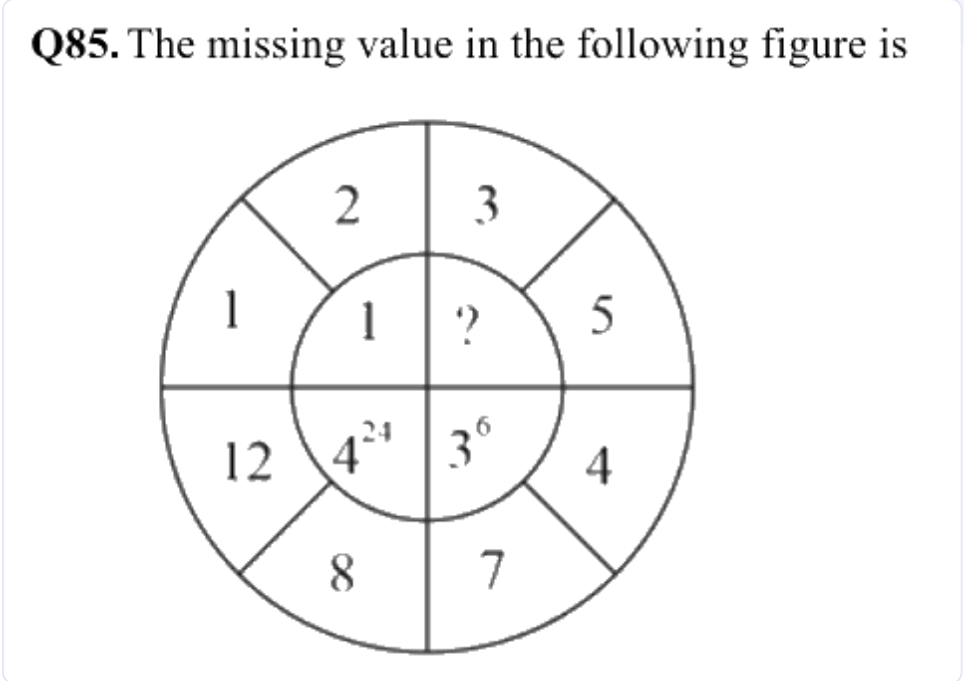
The number of times the digit 3 will be written when listing the integers from 1 to 1000 is

Numerical value type: the answer is a number.

Answer: 300. · Key from source paper

Q153 JEE Main 2021 · 18 Mar · Shift 1 Numerical

The missing value in the following figure is
(see the figure above)



Numerical value type: the answer is a number.

Answer: 4. · Key from source paper

Q154 JEE Main 2021 · 17 Mar · Shift 1 MCQ

Team $'A'$ consists of 7 boys and n girls and Team $'B'$ has 4 boys and 6 girls. If a total of 52 single matches can be arranged between these two teams when a boy plays against a boy and a girl plays against a girl, then n is equal to:

(A) 5
(B) 2
(C) 4
(D) 6

Answer: (C) 4 · Key from source paper

Q155 JEE Main 2021 · 17 Mar · Shift 2 MCQ

If the sides AB, BC and CA of a triangle ABC have 3,5 and 6 interior points respectively, then the total number of triangles that can be constructed using these points as vertices, is equal to:

(A) 364
(B) 240
(C) 333
(D) 360

Answer: (C) 333 · Key from source paper

Q156 JEE Main 2021 · 16 Mar · Shift 2 MCQ

Consider a rectangle $ABCD$ having 5, 6, 7, 9 points in the interior of the line segments AB, BC, CD, DA respectively. Let α be the number of triangles having these points from different sides as vertices and β be the number of quadrilaterals having these points from different sides as vertices. Then $(\beta - \alpha)$ is equal to

(A) 795
(B) 1173
(C) 1890
(D) 717

Answer: (D) 717 · Key from source paper

Q157 JEE Main 2021 · 26 Feb · Shift 1 MCQ

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) 77
(B) 82
(C) 42
(D) 35

Answer: (A) 77 · Key from source paper

Q158 JEE Main 2021 · 26 Feb · Shift 2 MCQ

A natural number has prime factorization given by $n = 2^x 3^y 5^z$, where y and z are such that $y + z = 5$ and $y^{-1} + z^{-1} = \frac{5}{6}$, $y > z$. Then the number of odd divisors of n, including 1, is:

(A) 12
(B) 6
(C) 11
(D) $6x$

Answer: (A) 12 · Key from source paper

Q159 JEE Main 2021 · 26 Feb · Shift 2 Numerical

The total number of 4-digit numbers whose greatest common divisor with 18 is 3 is _____.

Numerical value type: the answer is a number.

Answer: 1000. · Key from source paper

Q160 JEE Main 2021 · 25 Feb · Shift 1 MCQ

The total number of positive integral solutions (x, y, z) such that $xyz = 24$ is :

(A) 45
(B) 30
(C) 36
(D) 24

Answer: (B) 30 · Key from source paper

Q161 JEE Main 2021 · 25 Feb · Shift 1 Numerical

The total number of numbers, lying between 100 and 1000 that can be formed with the digits $1, 2, 3, 4, 5$, if the repetition of digits is not allowed and numbers are divisible by either 3 or 5, is

Numerical value type: the answer is a number.

Answer: 32. · Key from source paper

Q162 JEE Main 2021 · 24 Feb · Shift 1 MCQ

A scientific committee is to be formed from 6 Indians and 8 foreigners, which includes at least 2 Indians and double the number of foreigners as Indians. Then the number of ways, the committee can be formed, is:

(A) 1050
(B) 1625
(C) 575
(D) 560

Answer: (B) 1625 · Key from source paper

Q163 JEE Main 2021 · 24 Feb · Shift 1 Numerical

Let M be any 3×3 matrix with entries from the set $0, 1, 2$. The maximum number of such matrices, for which the sum of diagonal elements of $M^T M$ is seven, is _____.

Numerical value type: the answer is a number.

Answer: 540. · Key from source paper

Q164 JEE Main 2021 · 24 Feb · Shift 2 Numerical

The students $S_1, S_2, \ldots, S_{10}$ are to be divided into 3 groups A, B and C such that each group has at least one student and the group C has at most 3 students. Then the total number of possibilities of forming such groups is _____.

Numerical value type: the answer is a number.

Answer: 31650. · Key from source paper

Q165 JEE Main 2020 · 6 Sep · Shift 1 MCQ

Two families with three members each and one family with four members are to be seated in a row. In how many ways can they be seated so that the same family members are not separated ?

(A) $2!\ 3!\ 4!$
(B) $(3!)^3 \cdot (4!)$
(C) $(3!)2.\ (4!)$
(D) $3!\ (4!)^3$

Answer: (B) $(3!)^3 \cdot (4!)$ · Key from source paper

Q166 JEE Main 2020 · 6 Sep · Shift 2 Numerical

The number of words (with or without meaning) that can be formed from all the letters of the word "LETTER" in which vowels never come together is _____.

Numerical value type: the answer is a number.

Answer: 120. · Key from source paper

Q167 JEE Main 2020 · 5 Sep · Shift 1 Numerical

The number of words, with or without meaning, that can be formed by taking 4 letters at a time from the letters of the word 'SYLLABUS' such that two letters are distinct and two letters are alike, is

Numerical value type: the answer is a number.

Answer: 240. · Key from source paper

Q168 JEE Main 2020 · 5 Sep · Shift 2 MCQ

There are 3 sections in a question paper and each section contains 5 questions. A candidate has to answer a total of 5 questions, choosing at least one question from each section. Then the number of ways, in which the candidate can choose the questions, is:

(A) 3000
(B) 1500
(C) 2255
(D) 2250

Answer: (D) 2250 · Key from source paper

Q169 JEE Main 2020 · 4 Sep · Shift 2 Numerical

A test consists of 6 multiple choice questions, each having 4 alternative answers of which only one is correct. The number of ways, in which a candidate answers all six questions such that exactly four of the answers are correct, is _____

Numerical value type: the answer is a number.

Answer: 135. · Key from source paper

Q170 JEE Main 2020 · 3 Sep · Shift 2 Numerical

The total number of 3−digit numbers whose sum of digits is 10, is _____

Numerical value type: the answer is a number.

Answer: 54. · Key from source paper

Q171 JEE Main 2020 · 2 Sep · Shift 1 Numerical

If the letters of the word 'MOTHER' be permuted and all the words so formed (with or without meaning) be listed as in a dictionary, then the position of the word 'MOTHER' is.....

Numerical value type: the answer is a number.

Answer: 309. · Key from source paper

Q172 JEE Main 2020 · 2 Sep · Shift 2 MCQ

Let $n > 2$ be an integer. Suppose that there are n Metro stations in a city located around a circular path. Each pair of the nearest stations is connected by a straight track only. Further, each pair of the nearest station is connected by blue line, whereas all remaining pairs of stations are connected by red line. If number of red lines is 99 times the number of blue lines, then the value of n is

(A) 201
(B) 200
(C) 101
(D) 199

Answer: (A) 201 · Key from source paper

Q173 JEE Main 2020 · 9 Jan · Shift 1 MCQ

If the number of five digit numbers with distinct digits and 2 at the 10th place is $336k$, then k is equal to:

(A) 4
(B) 6
(C) 7
(D) 8

Answer: (D) 8 · Key from source paper

Q174 JEE Main 2020 · 8 Jan · Shift 1 MCQ

If a, b and c are the greatest values of ${}^{19}C_p$, ${}^{20}C_q$ and ${}^{21}C_r$ respectively, then:

(A) $\frac{a}{11} = \frac{b}{22} = \frac{c}{21}$
(B) $\frac{a}{10} = \frac{b}{11} = \frac{c}{21}$
(C) $\frac{a}{11} = \frac{b}{22} = \frac{c}{42}$
(D) $\frac{a}{10} = \frac{b}{11} = \frac{c}{42}$

Answer: (C) $\frac{a}{11} = \frac{b}{22} = \frac{c}{42}$ · Key from source paper

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Q175 JEE Main 2020 · 8 Jan · Shift 1 Numerical

An urn contains 5 red marbles, 4 black marbles and 3 white marbles. Then, the number of ways in which 4 marbles can be drawn so that at the most three of them are red is _____.

Numerical value type: the answer is a number.

Answer: 490. · Key from source paper

Q176 JEE Main 2020 · 8 Jan · Shift 2 Numerical

The number of 4 letter words (with or without meaning) that can be formed from the eleven letters of the word EXAMINATION is

Numerical value type: the answer is a number.

Answer: 2454. · Key from source paper

Q177 JEE Main 2020 · 7 Jan · Shift 1 MCQ

Total number of $6-$ digit numbers in which only and all the five digits $1, 3, 5, 7$ and 9 appears, is

(A) $\frac{1}{2}(6!)$
(B) $6!$
(C) 5^6
(D) $\frac{5}{2}(6!)$

Answer: (D) $\frac{5}{2}(6!)$ · Key from source paper

Q178 JEE Main 2020 · 7 Jan · Shift 2 MCQ

The number of ordered pairs (r, k) for which $6 \cdot {}^{35}C_r = (k^2 - 3) \cdot {}^{36}C_{r+1}$, where k is an integer is

(A) 3
(B) 2
(C) 6
(D) 4

Answer: (D) 4 · Key from source paper

Q179 JEE Main 2019 · 12 Apr · Shift 1 MCQ

The Number of ways of choosing 10 objects out of 31 objects of which 10 are identical and the remaining 21 are distinct, is:

(A) 2^{20}
(B) 2^{21}
(C) $2^{20} + 1$
(D) $2^{20} - 1$

Answer: (A) 2^{20} · Key from source paper

Q180 JEE Main 2019 · 12 Apr · Shift 2 MCQ

A group of students comprises of 5 boys and n girls. If the number of ways, in which a team of 3 students can randomly be selected from this group such that there is at least one boy and at least one girl in each team, is 1750, then n is equal to

(A) 24
(B) 27
(C) 25
(D) 28

Answer: (C) 25 · Key from source paper

Q181 JEE Main 2019 · 10 Apr · Shift 1 MCQ

The number of 6 digit number that can be formed using the digits 0, 1, 2, 5, 7 and 9 which are divisible by 11 and no digit is repeated is:

(A) 36
(B) 60
(C) 72
(D) 48

Answer: (B) 60 · Key from source paper

Q182 JEE Main 2019 · 10 Apr · Shift 2 MCQ

Suppose that 20 pillars of the same height have been erected along the boundary of circular stadium. If the top of each pillar has been connected by beams with the top of all its non-adjacent pillars, then the total number of beams is:

(A) 170
(B) 180
(C) 210
(D) 190

Answer: (A) 170 · Key from source paper

Q183 JEE Main 2019 · 9 Apr · Shift 1 MCQ

A committee of 11 member is to be formed from 8 males and 5 females. If m is the number of ways the committee is formed with at least 6 males and n is the number of ways the committee is formed with at least 3 females, then:

(A) $m = n = 68$
(B) $n = m - 8$
(C) $m = n = 78$
(D) $m + n = 68$

Answer: (C) $m = n = 78$ · Key from source paper

Q184 JEE Main 2019 · 8 Apr · Shift 1 MCQ

All possible numbers are formed using the digits 1, 1, 2, 2, 2, 2, 3, 4, 4 taken all at a time. The number of such numbers in which the odd digits occupy even places is

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(A) 175
(B) 162
(C) 180
(D) 160

Answer: (C) 180 · Key from source paper

Q185 JEE Main 2019 · 8 Apr · Shift 1 MCQ

The sum of all natural numbers n such that $100 < n < 200$ and $H.C.F.$ 91, $n > 1$ is

(A) 3203
(B) 3221
(C) 3121
(D) 3303

Answer: (C) 3121 · Key from source paper

Q186 JEE Main 2019 · 8 Apr · Shift 2 MCQ

The number of four-digit numbers strictly greater than 4321 that can be formed using the digit 0,1, 2,3, 4,5 (repetition of digits is allowed) is:

(A) 360
(B) 288
(C) 306
(D) 310

Answer: (D) 310 · Key from source paper

Q187 JEE Main 2019 · 12 Jan · Shift 1 MCQ

Let $S = \{1,\ 2,\ 3,\ \ldots.,\ 100\}$, then number of non-empty subsets A of S such that the product of elements in A is even is :

(A) $2^{100} - 1$
(B) $2^{50} + 1$
(C) $2^{50}\left(2^{50} - 1\right)$
(D) $2^{50} - 1$

Answer: (C) $2^{50}\left(2^{50} - 1\right)$ · Key from source paper

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Q188 JEE Main 2019 · 12 Jan · Shift 1 MCQ

Consider three boxes, each containing 10 balls labelled 1, 2, ..., 10. Suppose one ball is randomly drawn from each of the boxes. Denote by n_i, the label of the ball drawn from the ith box, $(i = 1,\ 2,\ 3)$. Then, the number of ways in which the balls can be chosen such that $n_1 < n_2 < n_3$ is :

(A) 240
(B) 82
(C) 120
(D) 164

Answer: (C) 120 · Key from source paper

Q189 JEE Main 2019 · 12 Jan · Shift 2 MCQ

There are m men and two women participating in a chess tournament. Each participant plays two games with every other participant. If the number of games played by the men between themselves exceeds the number of games played between the men and the women by 84, then the value of m is :

(A) 11
(B) 12
(C) 7
(D) 9

Answer: (B) 12 · Key from source paper

Q190 JEE Main 2019 · 12 Jan · Shift 2 MCQ

If ${}^nC_4$, ${}^nC_5$ and ${}^nC_6$ are in A.P., then n can be

(A) 9
(B) 14
(C) 12
(D) 11

Answer: (B) 14 · Key from source paper

Q191 JEE Main 2019 · 9 Jan · Shift 1 MCQ

Consider a class of 5 girls and 7 boys. The number of different teams consisting of 2 girls and 3 boys that can be formed from this class, if there are two specific boys A and B, who refuse to be the members of the same team, is:

(A) 300
(B) 200
(C) 500
(D) 350

Answer: (A) 300 · Key from source paper

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Q192 JEE Main 2019 · 9 Jan · Shift 2 MCQ

The number of natural numbers less than 7000 which can be formed by using the digits $0,\ 1,\ 3,\ 7,\ 9$ (repetition of digits allowed) is equal to:

(A) 375
(B) 250
(C) 374
(D) 372

Answer: (C) 374 · Key from source paper

Q193 JEE Main 2019 · 9 Jan · Shift 2 MCQ

Let S be the set of all triangles in the xy -plane, each having one vertex at the origin and the other two vertices lie on coordinate axes with integral coordinates. If each triangle in S has area 50 sq. units, then the number of elements in the set S is:

(A) 36
(B) 32
(C) 9
(D) 18

Answer: (A) 36 · Key from source paper

Q194 JEE Main 2018 · 16 Apr · Online MCQ

The number of numbers between $2,000$ and $5,000$ that can be formed with the digits $0, 1, 2, 3, 4$ (repetition of digits is not allowed) and are multiple of 3 is

(A) 36
(B) 30
(C) 24
(D) 48

Answer: (B) 30 · Checked by our team

Q195 JEE Main 2018 · 15 Apr · Shift 1 MCQ

n - digit numbers are formed using only three digits 2,5 and 7 . The smallest value of n for which 900 such distinct numbers can be formed, is

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(A) 6
(B) 8
(C) 9
(D) 7

Answer: (D) 7 · Key from source paper

Q196 JEE Main 2018 · 15 Apr · Shift 2 MCQ

The number of four letter words that can be formed using the letters of the word BARRACK is

(A) 144
(B) 120
(C) 264
(D) 270

Answer: (D) 270 · Key from source paper

Q197 JEE Main 2018 · 8 Apr · Offline MCQ

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. The number of such arrangements is:

(A) At least 750 but less than 1000
(B) At least 1000
(C) Less than 500
(D) At least 500 but less than 750

Answer: (B) At least 1000 · Key from source paper

Q198 JEE Main 2017 · 9 Apr · Online MCQ

The number of ways in which 5 boys and 3 girls can be seated on a round table if a particular boy B_1 and a particular girl G_1 never sit adjacent to each other, is:

(A) 7!
(B) $5 \times 6!$
(C) $6 \times 6!$
(D) $5 \times 7!$

Answer: (B) $5 \times 6!$ · Key from source paper

Q199 JEE Main 2017 · 8 Apr · Online MCQ

If all the words, with or without meaning, are written using the letters of the word QUEEN and are arranged as in English dictionary, then the position of the word QUEEN is:

(A) 47th
(B) 45th
(C) 46th
(D) 44th

Answer: (C) 46th · Key from source paper

Q200 JEE Main 2017 · 2 Apr · Offline MCQ

A man X has 7 friends, 4 of them are ladies and 3 are men. His wife Y also has 7 friends, 3 of them are ladies and 4 are men. Assume X and Y have no common friends. Then the total number of ways in which X and Y together can throw a party inviting 3 ladies and 3 men, so that 3 friends of each of X and Y are in this party is:

(A) 485
(B) 468
(C) 469
(D) 484

Answer: (A) 485 · Key from source paper

Q201 JEE Main 2016 · 10 Apr · Online MCQ

If $\frac{^{n+2}C_6}{^{n-2}P_2} = 11$, then n satisfies the equation:

(A) $n^2 + n - 110 = 0$
(B) $n^2 + 2n - 80 = 0$
(C) $n^2 + 3n - 108 = 0$
(D) $n^2 + 5n - 84 = 0$

Answer: (C) $n^2 + 3n - 108 = 0$ · Key from source paper

Q202 JEE Main 2016 · 9 Apr · Online MCQ

If the four letter words (need not be meaningful) are to be formed using the letters from the word "MEDITERRANEAN" such that the first letter is R and the fourth letter is E, then the total number of all such words is :

(A) 110
(B) 59
(C) $\frac{11!}{(2!)^3}$
(D) 56

Answer: (B) 59 · Key from source paper

EdLoop JEE

Q203 JEE Main 2016 · 3 Apr · Offline MCQ

If all the words (with or without meaning) having five letters, formed using the letters of the word $SMALL$ and arranged as in a dictionary; then the position of the word $SMALL$ is

(A) 52nd
(B) 58th
(C) 46th
(D) 59th

Answer: (B) 58th · Key from source paper

Q204 JEE Main 2015 · 11 Apr · Online MCQ

If in a regular polygon the number of diagonals is 54, then the number of sides of this polygon is:

(A) 12
(B) 10
(C) 6
(D) 9

Answer: (A) 12 · Key from source paper

Q205 JEE Main 2015 · 10 Apr · Online MCQ

The number of ways of selecting 15 teams from 15 men and 15 women, such that each team consists of a man and a woman is

(A) 1960
(B) 15!
(C) $(15!)^2$
(D) 14!

Answer: (B) 15! · Key from source paper

Q206 JEE Main 2015 · 4 Apr · Offline MCQ

The number of integers greater than 6000 that can be formed, using the digits 3, 5, 6, 7 and 8, without repetition is

(A) 72
(B) 216
(C) 192
(D) 120

Answer: (C) 192 · Key from source paper

Q207 JEE Main 2015 · 4 Apr · Offline MCQ

The number of points, having both co-ordinates as integers, that lie in the interior of the triangle with vertices $(0,\ 0)$, $(0,\ 41)$ and $(41,\ 0)$ is

(A) 780
(B) 901
(C) 861
(D) 820

Answer: (A) 780 · Key from source paper

Q208 JEE Main 2014 · 19 Apr · Online MCQ

Two women and some men participated in a chess tournament in which every participant played two games with each of the other participants. If the number of games that the men played between them-selves exceeds the number of games that the men played with the women by 66, then the number of men who participated in the tournament lies in the interval

(A) $(11, 13]$
(B) $(14, 17)$
(C) $[10, 12)$
(D) $[8, 9]$

Answer: (C) $[10, 12)$ · Key from source paper

Q209 JEE Main 2014 · 12 Apr · Online MCQ

8-digit numbers are formed using the digits 1, 1, 2, 2, 2, 3, 4, 4. The number of such numbers in which the odd digits do no occupy odd places, is:

(A) 160
(B) 120
(C) 60
(D) 48

Answer: (B) 120 · Key from source paper

Q210 JEE Main 2014 · 11 Apr · Online MCQ

An eight digit number divisible by 9 is to be formed using digits from 0 to 9 without repeating the digits. The number of ways in which this can be done is:

(A) $72(7!)$
(B) $18(7!)$
(C) $40(7!)$
(D) $36(7!)$

Answer: (D) $36(7!)$ · Key from source paper

Q211 JEE Main 2014 · 9 Apr · Online MCQ

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

(A) 18
(B) 36
(C) 108
(D) 432

Answer: (C) 108 · Key from source paper

Q212 JEE Main 2013 · 25 Apr · Online MCQ

5 - digit numbers are to be formed using 2, 3, 5, 7, 9 without repeating the digits. If p be the number of such numbers that exceed 20000 and q be the number of those that lie between 30000 and 90000 , then $p : q$ is:

(A) 6 : 5
(B) 3 : 2
(C) 4 : 3
(D) 5 : 3

Answer: (D) 5 : 3 · Key from source paper

Q213 JEE Main 2013 · 23 Apr · Online MCQ

On the sides AB, BC, CA of a $\triangle$ABC, 3, 4, 5 distinct points (excluding vertices A, B, C) are respectively chosen. The number of triangles that can be constructed using these chosen points as vertices are :

(A) 210
(B) 205
(C) 215
(D) 220

Answer: (B) 205 · Key from source paper

Q214 JEE Main 2013 · 22 Apr · Online MCQ

The number of ways in which an examiner can assign 30 marks to 8 questions, giving not less than 2 marks to any question, is :

(A) ${}^{30}C_7$
(B) ${}^{21}C_8$
(C) ${}^{21}C_7$
(D) ${}^{30}C_8$

Answer: (C) ${}^{21}C_7$ · Key from source paper

Q215 JEE Main 2013 · 9 Apr · Online MCQ

A committee of 4 persons is to be formed from 2 ladies, 2 old men and 4 young men such that it includes at least 1 lady, at least 1 old man and at most 2 young men. Then the total number of ways in which this committee can be formed is :

(A) 40
(B) 41
(C) 16
(D) 32

Answer: (B) 41 · Key from source paper

Q216 JEE Main 2013 · 7 Apr · Offline MCQ

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 :

(A) 10
(B) 8
(C) 5
(D) 7

Answer: (C) 5 · Key from source paper

Q217 AIEEE 2012 · 26 May · Online MCQ

If seven women and seven men are to be seated around a circular table such that there is a man on either side of every woman, then the number of seating arrangements is

(A) $6!7!$
(B) $(6!)^2$
(C) $(7!)^2$
(D) $7!$

Answer: (A) $6!7!$ · Key from source paper

Q218 AIEEE 2012 · 19 May · Online MCQ

The number of arrangements that can be formed from the letters a, b, c, d, e, f taken 3 at a time without repetition and each arrangement containing at least one vowel, is

(A) 96
(B) 128
(C) 24
(D) 72

Answer: (A) 96 · Key from source paper

Q219 AIEEE 2012 · 19 May · Online MCQ

If $n = {}^{m}C_2$, then the value of ${}^{n}C_2$ is given by

(A) $3\left({}^{m+1}C_4\right)$
(B) ${}^{m-1}C_4$
(C) ${}^{m+1}C_4$
(D) $2\left({}^{m+2}C_4\right)$

Answer: (A) $3\left({}^{m+1}C_4\right)$ · Key from source paper

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Q220 AIEEE 2012 · 7 May · Online MCQ

If the number of 5-element subsets of the set $A = \{a_1, a_2, ..., a_{20}\}$ of 20 distinct elements is k times the number of 5-element subsets containing a_4, then k is

(A) 5
(B) $\frac{20}{7}$
(C) 4
(D) $\frac{10}{3}$

Answer: (C) 4 · Key from source paper

Q221 AIEEE 2012 · Offline MCQ

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) 629
(C) 630
(D) 879

Answer: (D) 879 · Key from source paper

Q222 AIEEE 2011 MCQ

This question has Statement -1 and Statement -2. Of the four choices given after the statements, choose the one that best describes the two statements. 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 true; Statement -2 is not a correct explanation for Statement -1

(B) Statement -1 is true, Statement -2 is false.

(C) Statement -1 is false, Statement- 2 is true.

(D) Statement -1 is true, Statement -2 is true; Statement -2 is a correct explanation for Statement -1

Answer: (D) Statement -1 is true, Statement -2 is true; Statement -2 is a correct explanation for Statement -1 · Key from source paper

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Q223 AIEEE 2010 MCQ

There are two urns. Urn A has 3 distinct red balls and urn B has 9 distinct blue balls. From each urn two balls are taken out at random and then 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) 108 · Key from source paper

Q224 AIEEE 2009 MCQ

From 6 different novels and 3 different dictionaries, 4 novels and 1 dictionary are to be selected and arranged in a row on the shelf so that the dictionary is always in the middle. Then the number of such arrangements is

(A) less than 500

(B) at least 500 but less than 750

(C) at least 750 but less than 1000

(D) at least 1000

Answer: (D) at least 1000 · Key from source paper

Q225 AIEEE 2008 MCQ

In a shop there are five types of ice-creams available. A child buys six ice-creams. Statement -1: The number of different ways the child can buy the six ice-creams is ${}^{10}C_5$. Statement -2 : The number of different ways the child can buy the six ice-creams is equal to the number of different ways of arranging 6 A$'^s$ and 4 B's in a row.

(A) Statement -1 is false, Statement -2 is true

(B) Statement -1 is true, Statement -2 is true, Statement -2 is a correct explanation for Statement -1

(C) Statement -1 is true, Statement -2 is true; Statement -2 is not a correct explanation for Statement -1.

(D) Statement -1 is true, Statement -2 is false.

Answer: (A) Statement -1 is false, Statement -2 is true · Key from source paper

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Q226 AIEEE 2008 MCQ

How many different words can be formed by jumbling the letters in the word MISSISSIPPI in which no two S are adjacent?

(A) $8 \cdot {}^{6}C_{4} \cdot {}^{7}C_{4}$

(B) $6.8 \cdot {}^{7}C_{4}$

(C) $6 \cdot 7 \cdot {}^{8}C_{4}$

(D) $7 \cdot {}^{6}C_{4} \cdot {}^{8}C_{4}$

Answer: (D) $7 \cdot {}^{6}C_{4} \cdot {}^{8}C_{4}$ · Key from source paper

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Q227 AIEEE 2007 MCQ

The set $S = \{1, 2, 3, \ldots, 12\}$ 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) $\frac{12!}{3!(3!)^4}$

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

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

Answer: (C) $\frac{12!}{(4!)^3}$ · Key from source paper

Q228 AIEEE 2006 MCQ

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 of be elected (sic). 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) 385 · Key from source paper

Q229 AIEEE 2005 MCQ

If the letters of word SACHIN are arranged in all possible ways and these words are written out as in dictionary, then the word SACHIN appears at serial number

(A) 601
(B) 600
(C) 603
(D) 602

Answer: (A) 601 · Key from source paper

Q230 AIEEE 2005 MCQ

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) ${}^{56}C_4$ · Key from source paper

Q231 AIEEE 2004 MCQ

How many ways are there to arrange the letters in the word GARDEN with the vowels in alphabetical order?

(A) 120
(B) 480
(C) 360
(D) 240

Answer: (C) 360 · Key from source paper

Q232 AIEEE 2004 MCQ

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

(A) 5
(B) ${}^{8}C_3$
(C) 3^8
(D) 21

Answer: (D) 21 · Key from source paper

Q233 AIEEE 2003 MCQ

If ${}^{n}C_{r}$ denotes the number of combination of n things taken r at a time, then the expression ${}^{n}C_{r+1} + {}^{n}C_{r-1} + 2\,{}^{n}C_{r}$ equals

(A) ${}^{n+1}C_{r+1}$
(B) ${}^{n+2}C_{r}$
(C) ${}^{n+2}C_{r+1}$
(D) ${}^{n+1}C_{r}$

Answer: (C) ${}^{n+2}C_{r+1}$ · Key from source paper

Q234 AIEEE 2003 MCQ

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

(A) 346
(B) 140
(C) 196
(D) 280

Answer: (C) 196 · Key from source paper

Q235 AIEEE 2003 MCQ

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) $7! \times 5!$
(B) $6! \times 5!$
(C) 30
(D) $5! \times 4!$

Answer: (B) $6! \times 5!$ · Checked by our team

Q236 AIEEE 2002 MCQ

Total number of four digit odd numbers that can be formed using 0, 1, 2, 3, 5, 7 (using repetition allowed) are

(A) 216
(B) 375
(C) 400
(D) 720

Answer: (D) 720 · Key from source paper

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Q237 AIEEE 2002 MCQ

Number greater than 1000 but less than 4000 is formed using the digits 0, 1, 2, 3, 4 (repetition allowed) is

(A) 125
(B) 105
(C) 375
(D) 625

Answer: (C) 375 · Key from source paper

Q238 AIEEE 2002 MCQ

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

(A) 312
(B) 3125
(C) 120
(D) 216

Answer: (D) 216 · Key from source paper

Q239 AIEEE 2002 MCQ

The sum of integers from 1 to 100 that are divisible by 2 or 5 is

(A) 3000
(B) 3050
(C) 3600
(D) 3250

Answer: (B) 3050 · Key from source paper

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