

# **MOST DETAILED ANALYSIS**

**JEE MAIN MATH**



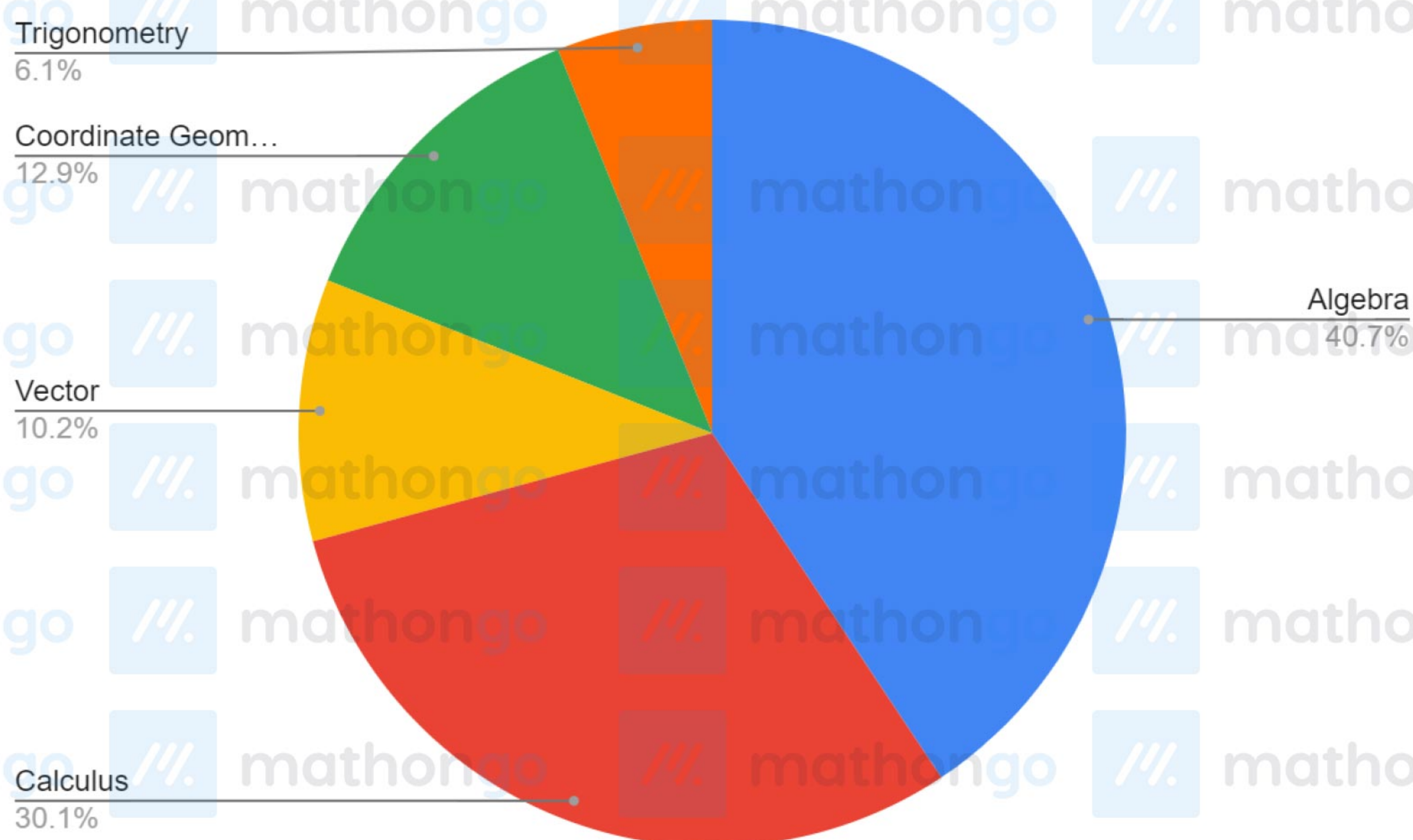
A lot of hard work has gone into making this Analysis and I thank the entire MathonGo & Marks team for the aggregation of the data of this Master Analysis. We at MathonGo hope that this analysis will provide the right direction to the students & help them secure great score

**Anup Gupta, Founder MathonGo**

We have divided Math in to 5 Phases (Blocks)

1. Algebra
2. Calculus
3. Coordinate Geometry
4. Vector Algebra
5. Trigonometry

Weightage of these phases over the last 3 years (spanning a total of 58 papers)



- As you can see 70 percent of the paper is from Algebra and Calculus.
- It is because these units have the maximum of chapters in them.
- But the best part is that these units are mostly independent of each other. This gives a student an opportunity to prepare and concentrate on one unit without the burden of not knowing other units.

**Targeting 99 Percentile in JEE Main 2022?**

Click here to join the *most trusted* online Maths Crash Course

*Pre-Requisites*

*Basics that will help the entire Math Syllabus*

|                              |                      |                                                |
|------------------------------|----------------------|------------------------------------------------|
| <i>Algebra</i>               | Basic of Mathematics | Basic of Quadratic, very Basic Permutation     |
| <i>Differential Calculus</i> | Basic of Mathematics | Basic Functions                                |
| <i>Integral Calculus</i>     | Basic of Mathematics | Basic Integration and its Formulas             |
| <i>Vector</i>                |                      | Position of a point in 2D & 3 D                |
| <i>Coordinate Geometry</i>   |                      | Basic shapes and loci definition of all shapes |
| <i>Trigonometry</i>          |                      | Trigonometry Formulas                          |

**Special Notes:**

- Basic of Mathematics includes Logarithm & Inequalities, Trigonometric Formulas etc.
- Questions using Permutation are asked in Matrices & Determinants as well as Vectors. Hence, we recommend students to prepare basic permutation
- In coordinate geometry when we say loci definitions that means that student should know the geometric logic behind formation of each conic. Why? That comes handy in Geometry of Complex Numbers and in overall conic sections as well.

**Targeting 99 Percentile in JEE Main 2022?**

Click here to join the *most trusted* online Maths Crash Course

# MOST DETAILED ANALYSIS OF JEE MAIN MATH - ALGEBRA

We recommend to give more weightage to 2019 & 2021 as the paper consisted of 30 Questions as compared to 25 in 2020  
Number of Papers – 2019 (16 Papers) 2020 (16 Papers) and 2021 (26 Papers) – Total of 58 Papers in 3 years  
The table shows the number of questions that came from each chapter in the respective years



## WEIGHTAGE OF CHAPTERS IN ALGEBRA

| Chapter                 | Opportunity | Overall | 2021 | 2020 | 2019 |
|-------------------------|-------------|---------|------|------|------|
| Sequences and Series    | Scoring 🚀   | 92      | 38   | 28   | 26   |
| Binomial Theorem        |             | 78      | 38   | 19   | 21   |
| Probability             |             | 68      | 32   | 17   | 19   |
| Determinants            | Scoring 🚀   | 72      | 29   | 21   | 22   |
| Complex Number          |             | 61      | 30   | 17   | 14   |
| Quadratic Equation      |             | 59      | 23   | 16   | 20   |
| Matrices                | Scoring 🚀   | 52      | 33   | 10   | 9    |
| Mathematical Reasoning  | Scoring 🚀   | 57      | 25   | 16   | 16   |
| Permutation Combination |             | 53      | 26   | 13   | 14   |
| Statistics              | Scoring 🚀   | 50      | 21   | 15   | 14   |
| Sets and Relations      | Scoring 🚀   | 26      | 10   | 8    | 8    |
| Basic of Mathematics    |             | 5       | 4    | 0    | 1    |
| Mathematical Induction  |             | 1       | 1    | 0    | 0    |
| Linear Programming      |             | 1       | 1    | 0    | 0    |

If you just concentrate on the “Scoring Topics” how many questions you will be able to solve

| Algebra                                   | Overall | 2021 | 2020 | 2019 |
|-------------------------------------------|---------|------|------|------|
| Total Number of Questions                 | 675     | 311  | 180  | 184  |
| Number of questions from Scoring Chapters | 349     | 156  | 98   | 95   |
| % of questions from Scoring Chapters      | 52      | 50   | 54   | 52   |
| Questions per paper from Scoring Chapters | 6       | 6    | 6    | 5.9  |

# 6 QUESTIONS PER PAPER



Denotes the ones that are important as per their weightage.



You can tick once you have finished practicing this topic and have gained confidence



### Important Topics in MATRICES

|                                     | 2019 | 2020 | 2021 | Total | Covered                  |
|-------------------------------------|------|------|------|-------|--------------------------|
| Formation and Basic of Matrix       | 0    | 0    | 1    | 1     | <input type="checkbox"/> |
| Basic Algebra of Matrices           | 1    | 0    | 1    | 2     | <input type="checkbox"/> |
| <b>Product of Matrices</b>          | 3    | 5    | 15 🔥 | 23    | <input type="checkbox"/> |
| Trace of a Matrix                   | 1    | 1    | 2    | 4     | <input type="checkbox"/> |
| Symmetric & Skew Symmetric Matrices | 1    | 1    | 3    | 5     | <input type="checkbox"/> |
| Types of Matrices                   | 0    | 0    | 1    | 1     | <input type="checkbox"/> |
| Adjoint and its Properties          | 0    | 2    | 4    | 6     | <input type="checkbox"/> |
| <b>Inverse of a Matrix</b>          | 3    | 1    | 6 🔥  | 10    | <input type="checkbox"/> |
| Rank of Matrix                      | 0    | 0    | 0    | 0     | <input type="checkbox"/> |

### Important Topics in DETERMINANTS

|                                                 | 2019 | 2020 | 2021 | Total | Covered                  |
|-------------------------------------------------|------|------|------|-------|--------------------------|
| <b>Expansion of Determinants</b>                | 5    | 7    | 10 🔥 | 22    | <input type="checkbox"/> |
| Multiplication of Determinants                  | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Summation of Determinants                       | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Differentiation and Integration of Determinants | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| <b>System of Linear Equations 🔥🔥</b>            | 13   | 14   | 19   | 46    | <input type="checkbox"/> |
| Miscellaneous                                   | 4    | 0    | 0    | 4     | <input type="checkbox"/> |

### Important Topics in SEQUENCE SERIES

|                                  | 2019 | 2020 | 2021 | Total | Covered                  |
|----------------------------------|------|------|------|-------|--------------------------|
| Arithmetic Geometric Progression | 0    | 0    | 2    | 2     | <input type="checkbox"/> |
| <b>Arithmetic Progression 🔥</b>  | 6    | 10   | 10   | 26    | <input type="checkbox"/> |
| Geometric Progression            | 3    | 11   | 4    | 18    | <input type="checkbox"/> |
| Harmonic Progression             | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Inequalities                     | 0    | 0    | 2    | 2     | <input type="checkbox"/> |
| Means                            | 1    | 2    | 1    | 4     | <input type="checkbox"/> |
| Mixed Question on AP and GP      | 3    | 1    | 4    | 8     | <input type="checkbox"/> |
| <b>Summation of Series 🔥🔥</b>    | 13   | 4    | 15   | 32    | <input type="checkbox"/> |

**Targeting 99 Percentile in JEE Main 2022?**

Click here to join the *most trusted* online Maths Crash Course

### Important Topics in BINOMIAL THEOREM

|                                          | 2019 | 2020 | 2021 | Total | Covered                  |
|------------------------------------------|------|------|------|-------|--------------------------|
| Terms of Binomial Expansion 🔥🔥           | 8    | 11   | 18   | 37    | <input type="checkbox"/> |
| Properties of Binomial Coefficients      | 7    | 2    | 3    | 12    | <input type="checkbox"/> |
| Sum of Series                            | 5    | 2    | 7    | 14    | <input type="checkbox"/> |
| Remainder and Divisibility Problems      | 1    | 1    | 4 🔥  | 6     | <input type="checkbox"/> |
| Multinomial Theorem                      | 0    | 1    | 2    | 3     | <input type="checkbox"/> |
| Series involving Product of Coefficients | 0    | 0    | 2    | 2     | <input type="checkbox"/> |
| Binomial Theorem for Negative Index      | 0    | 1    | 1    | 2     | <input type="checkbox"/> |
| Integral and Fractional Part of a Number | 0    | 1    | 0    | 1     | <input type="checkbox"/> |
| Binomial Theorem for Rational Index      | 0    | 0    | 1    | 1     | <input type="checkbox"/> |
| Comparison between two numbers           | 0    | 0    | 0    | 0     | <input type="checkbox"/> |

### Important Topics in COMPLEX NUMBER

|                                   | 2019 | 2020 | 2021 | Total | Covered                  |
|-----------------------------------|------|------|------|-------|--------------------------|
| Power of iota                     | 0    | 2    | 1    | 3     | <input type="checkbox"/> |
| Algebra of complex numbers 🔥      | 8    | 3    | 7    | 18    | <input type="checkbox"/> |
| Conjugate, modulus and argument 🔥 | 5    | 6    | 12   | 23    | <input type="checkbox"/> |
| Polar and Euler Form              | 0    | 0    | 1    | 1     | <input type="checkbox"/> |
| Logarithm of a complex number     | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| De Moivres Theorem                | 0    | 1    | 0    | 1     | <input type="checkbox"/> |
| Cube Root of Unity                | 0    | 2    | 2    | 4     | <input type="checkbox"/> |
| $n$ th roots of unity             | 0    | 1    | 0    | 1     | <input type="checkbox"/> |
| Rotation Theorem                  | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Locus Based on Distance Formula   | 0    | 2    | 0    | 2     | <input type="checkbox"/> |
| Geometry of Complex Number        | 1    | 0    | 7 🔥  | 8     | <input type="checkbox"/> |

### Important Topics in PERMUTATION COMBINATION

|                                             | 2019 | 2020 | 2021 | Total | Covered                  |
|---------------------------------------------|------|------|------|-------|--------------------------|
| Factorial                                   | 0    | 1    | 1    | 2     | <input type="checkbox"/> |
| Permutation                                 | 0    | 0    | 2    | 2     | <input type="checkbox"/> |
| Combination                                 | 0    | 3    | 5    | 8     | <input type="checkbox"/> |
| Arrangement under Constraint 🔥🔥             | 8    | 5    | 5    | 18    | <input type="checkbox"/> |
| Circular Permutation                        | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Selection of one or more item 🔥             | 6    | 2    | 4    | 12    | <input type="checkbox"/> |
| Division and Distribution of Distinct Items | 0    | 1    | 1    | 2     | <input type="checkbox"/> |
| Division of Identical items                 | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Summation of Numbers                        | 0    | 1    | 4    | 5     | <input type="checkbox"/> |
| Exponent of prime                           | 0    | 0    | 1    | 1     | <input type="checkbox"/> |
| Dearrangement                               | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Geometric Permutation                       | 0    | 0    | 3    | 3     | <input type="checkbox"/> |

### Important Topics in PROBABILITY

|                                                | 2019 | 2020 | 2021 | Total | Covered                  |
|------------------------------------------------|------|------|------|-------|--------------------------|
| Classical Definition of Probability 🔥🔥         | 3    | 5    | 13   | 21    | <input type="checkbox"/> |
| Addition and Subtraction Theorems              | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Conditional Prob. & Multiplication Theorem 🔥   | 5    | 2    | 4    | 11    | <input type="checkbox"/> |
| Independent Events                             | 1    | 1    | 3    | 5     | <input type="checkbox"/> |
| Total Probability                              | 4    | 2    | 2    | 8     | <input type="checkbox"/> |
| Bayes' Theorem                                 | 1    | 1    | 2    | 4     | <input type="checkbox"/> |
| Bernoulli Trial and Binomial Distribution 🔥    | 2    | 3    | 5    | 10    | <input type="checkbox"/> |
| Random Variable & its Probability Distribution | 3    | 3    | 3    | 9     | <input type="checkbox"/> |
| Geometric Probability                          | 0    | 0    | 0    | 0     | <input type="checkbox"/> |

### Important Topics in QUADRATIC EQUATION

|                                            | 2019 | 2020 | 2021 | Total | Covered                  |
|--------------------------------------------|------|------|------|-------|--------------------------|
| Relation between Roots and Coefficients 🔥🔥 | 15   | 10   | 12   | 37    | <input type="checkbox"/> |
| Common Roots                               | 2    | 1    | 0    | 3     | <input type="checkbox"/> |
| Graph and Sign of Quadratic                | 1    | 2    | 2    | 5     | <input type="checkbox"/> |
| Range of Quadratic Function                | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Location of Roots                          | 1    | 2    | 1    | 4     | <input type="checkbox"/> |
| N degree equation                          | 1    | 1    | 8 🔥  | 10    | <input type="checkbox"/> |
| Descartes Rule of Sign                     | 0    | 0    | 0    | 0     | <input type="checkbox"/> |

**Targeting 99 Percentile in JEE Main 2022?**

Click here to join the *most trusted* online Maths Crash Course

## MOST DETAILED ANALYSIS OF JEE MAIN MATH

We recommend to give more weightage to 2019 & 2021 as the paper consisted of 30 Questions as compared to 25 in 2020  
Number of Papers – 2019 (16 Papers) 2020 (16 Papers) and 2021 (26 Papers) – Total of 58 Papers in 3 years  
The table shows the number of questions that came from each chapter in the respective years



### WEIGHTAGE OF CHAPTERS IN CALCULUS

| Chapter                          | Opportunity | Overall | 2021 | 2020 | 2019 |
|----------------------------------|-------------|---------|------|------|------|
| Application of Derivatives       |             | 89      | 36   | 31   | 22   |
| Definite Integration             |             | 86      | 48   | 15   | 23   |
| Differential Equations           | Scoring 🚀   | 74      | 43   | 16   | 15   |
| Functions                        |             | 58      | 32   | 11   | 15   |
| Limits                           | Scoring 🚀   | 49      | 24   | 13   | 12   |
| Continuity and Differentiability |             | 45      | 23   | 9    | 13   |
| Area Under Curves                | Scoring 🚀   | 42      | 17   | 11   | 14   |
| Indefinite Integration           |             | 34      | 11   | 8    | 15   |
| Differentiation                  | Scoring 🚀   | 23      | 5    | 9    | 9    |

If you just concentrate on the “Scoring Topics” how many questions you will be able to solve

|                                           | Overall | 2021 | 2020 | 2019 |
|-------------------------------------------|---------|------|------|------|
| Algebra                                   |         |      |      |      |
| Total Number of Questions                 | 500     | 239  | 123  | 138  |
| Number of questions from Scoring Chapters | 188     | 89   | 49   | 50   |
| % of questions from Scoring Chapters      | 38      | 37   | 40   | 36   |
| Questions per paper from Scoring Chapters | 3.2     | 3.4  | 3    | 3    |

# 3 QUESTIONS PER PAPER

**Targeting 99 Percentile in JEE Main 2022?**

Click here to join the *most trusted* online Maths Crash Course



Denotes the ones that are important as per their weightage.



You can tick once you have finished practicing this topic and have gained confidence



### Important Topics in FUNCTIONS

|                             | 2019 | 2020 | 2021 | Total | Covered                  |
|-----------------------------|------|------|------|-------|--------------------------|
| Domain                      | 1    | 1    | 5    | 7     | <input type="checkbox"/> |
| Range                       | 1    | 2    | 1    | 4     | <input type="checkbox"/> |
| Identical Functions         | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Odd and Even Functions      | 2    | 0    | 1    | 3     | <input type="checkbox"/> |
| Periodicity                 | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Composite Function          | 4    | 2    | 3    | 9     | <input type="checkbox"/> |
| Types of Function (Mapping) | 4    | 0    | 4    | 8     | <input type="checkbox"/> |
| Inverse of a Function       | 0    | 1    | 4    | 5     | <input type="checkbox"/> |
| Functional Equation         | 1    | 4    | 7 🔥  | 12    | <input type="checkbox"/> |
| Definition of Function      | 2    | 1    | 0    | 3     | <input type="checkbox"/> |
| Number of Solutions         | 0    | 0    | 7 🔥  | 7     | <input type="checkbox"/> |

### Important Topics in LIMITS

|                                        | 2019 | 2020 | 2021 | Total | Covered                  |
|----------------------------------------|------|------|------|-------|--------------------------|
| Existence of Limit                     | 0    | 2    | 0    | 2     | <input type="checkbox"/> |
| Algebraic and Rational Limits          | 6    | 5    | 6    | 17    | <input type="checkbox"/> |
| Trigonometric & Inverse Trigo limits 🔥 | 5    | 2    | 7    | 14    | <input type="checkbox"/> |
| Exponential and logarithmic limits     | 0    | 1    | 2    | 3     | <input type="checkbox"/> |
| Special Forms                          | 1    | 2    | 1    | 4     | <input type="checkbox"/> |
| Miscellaneous                          | 0    | 1    | 8    | 9     | <input type="checkbox"/> |

### Important Topics in CONTINUITY DIFFERENTIABILITY

|                   | 2019 | 2020 | 2021 | Total | Covered                  |
|-------------------|------|------|------|-------|--------------------------|
| Continuity        | 7    | 3    | 14   | 24    | <input type="checkbox"/> |
| Differentiability | 6    | 6    | 9    | 21    | <input type="checkbox"/> |

**Targeting 99 Percentile in JEE Main 2022?**

Click here to join the *most trusted* online Maths Crash Course

### Important Topics in DIFFERENTIATION

|                                            | 2019 | 2020 | 2021 | Total | Covered                  |
|--------------------------------------------|------|------|------|-------|--------------------------|
| Differentiation of composite functions     | 2    | 2    | 0    | 4     | <input type="checkbox"/> |
| Differentiation of implicit functions 🔥    | 0    | 3    | 2    | 5     | <input type="checkbox"/> |
| Parametric differentiation                 | 1    | 1    | 0    | 2     | <input type="checkbox"/> |
| Logarithmic differentiation                | 3    | 0    | 0    | 3     | <input type="checkbox"/> |
| Derivative of $f(x)$ wrt $g(x)$            | 0    | 1    | 0    | 1     | <input type="checkbox"/> |
| Diff. of Inverse Trigonometric Functions 🔥 | 2    | 1    | 2    | 5     | <input type="checkbox"/> |
| Derivative of function and its inverse     | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Higher order derivatives                   | 1    | 1    | 0    | 2     | <input type="checkbox"/> |
| Functional Equation                        | 0    | 0    | 1    | 1     | <input type="checkbox"/> |
| Differentiation of determinants            | 0    | 0    | 0    | 0     | <input type="checkbox"/> |

### Important Topics in APPLICATION OF DERIVATIVE

|                                      | 2019 | 2020 | 2021 | Total | Covered                  |
|--------------------------------------|------|------|------|-------|--------------------------|
| Tangent Normal                       | 8    | 8    | 9    | 25    | <input type="checkbox"/> |
| Maxima Minima                        | 8    | 8    | 12 🔥 | 28    | <input type="checkbox"/> |
| Monotonicity                         | 4    | 5    | 11 🔥 | 20    | <input type="checkbox"/> |
| Rate Measure Error and Approximation | 2    | 3    | 1    | 6     | <input type="checkbox"/> |
| Mean Value Theorem                   | 0    | 7    | 3    | 10    | <input type="checkbox"/> |

### Important Topics in INDEFINITE INTEGRATION

|                                       | 2019 | 2020 | 2021 | Total | Covered                  |
|---------------------------------------|------|------|------|-------|--------------------------|
| Fundamental of Indefinite Integration | 1    | 0    | 0    | 1     | <input type="checkbox"/> |
| Integration by Substitution 🔥         | 12   | 7    | 10   | 29    | <input type="checkbox"/> |
| Integration by Parts                  | 2    | 1    | 0    | 3     | <input type="checkbox"/> |
| Integration using Partial Fraction    | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Integration using Reduction Formula   | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Miscellaneous Forms                   | 0    | 0    | 1    | 1     | <input type="checkbox"/> |

**Targeting 99 Percentile in JEE Main 2022?**

Click here to join the *most trusted* online Maths Crash Course

### Important Topics in DEFINITE INTEGRATION

|                                           | 2019 | 2020 | 2021 | Total | Covered                  |
|-------------------------------------------|------|------|------|-------|--------------------------|
| Definite Integration by Parts             | 0    | 0    | 2    | 2     | <input type="checkbox"/> |
| Definite Integration by Substitution      | 6    | 2    | 1    | 9     | <input type="checkbox"/> |
| Properties of Definite Integration 🔥      | 7    | 5    | 24   | 36    | <input type="checkbox"/> |
| Properties of Periodic Functions          | 1    | 1    | 6    | 8     | <input type="checkbox"/> |
| Leibnitz Rule of Differentiation          | 4    | 1    | 5    | 10    | <input type="checkbox"/> |
| Definite Integration by Reduction Formula | 0    | 1    | 3    | 4     | <input type="checkbox"/> |
| Properties Involving Inequalities         | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Definite as Limit of Sum                  | 2    | 0    | 5    | 7     | <input type="checkbox"/> |
| Walli's Formula                           | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Miscellaneous                             | 3    | 5    | 1    | 9     | <input type="checkbox"/> |

### Important Topics in AREA

|                                      | 2019 | 2020 | 2021 | Total | Covered                  |
|--------------------------------------|------|------|------|-------|--------------------------|
| Area of Curve along axis             | 0    | 0    | 3    | 3     | <input type="checkbox"/> |
| Area bounded by two curves           | 7    | 5    | 11   | 23    | <input type="checkbox"/> |
| Area bounded by Miscellaneous Curves | 7    | 6    | 3    | 16    | <input type="checkbox"/> |

### Important Topics in DIFFERENTIAL EQUATION

|                                    | 2019 | 2020 | 2021 | Total | Covered                  |
|------------------------------------|------|------|------|-------|--------------------------|
| Order and Degree                   | 0    | 0    | 1    | 1     | <input type="checkbox"/> |
| Formation of Differential Equation | 0    | 2    | 2    | 4     | <input type="checkbox"/> |
| Variable Separable Form            | 2    | 8    | 11   | 21    | <input type="checkbox"/> |
| Homogeneous DE                     | 0    | 2    | 3    | 5     | <input type="checkbox"/> |
| Linear Differential Equation 🔥     | 11   | 4    | 17   | 32    | <input type="checkbox"/> |
| Exact Forms                        | 2    | 0    | 7 🔥  | 9     | <input type="checkbox"/> |
| Orthogonal Trajectory              | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Applications of DE                 | 0    | 0    | 2    | 2     | <input type="checkbox"/> |

**Targeting 99 Percentile in JEE Main 2022?**

Click here to join the *most trusted* online Maths Crash Course

## MOST DETAILED ANALYSIS OF JEE MAIN MATH

We recommend to give more weightage to 2019 & 2021 as the paper consisted of 30 Questions as compared to 25 in 2020  
Number of Papers – 2019 (16 Papers) 2020 (16 Papers) and 2021 (26 Papers) – Total of 58 Papers in 3 years  
The table shows the number of questions that came from each chapter in the respective years



### WEIGHTAGE OF CHAPTERS IN COORDINATE GEOMETRY

| Chapter        | Opportunity | Overall | 2021 | 2020 | 2019 |
|----------------|-------------|---------|------|------|------|
| Straight Lines | Scoring 🚀   | 51      | 19   | 12   | 20   |
| Circle         |             | 58      | 29   | 8    | 21   |
| Parabola       |             | 40      | 14   | 11   | 15   |
| Ellipse        |             | 35      | 15   | 11   | 9    |
| Hyperbola      |             | 28      | 10   | 7    | 11   |
| Pair of Lines  |             | 2       | 2    | 0    | 0    |

Coordinate Topics require practice as the questions are not tough but sometimes tricky.

Circle and the entire Conic Section have a lot of topics to study and are vast as well.

But if you Circle well, the properties almost remain same just expression change

Ellipse if done properly will help Hyperbola automatically.

# 12

# PERCENT PER PAPER

**Targeting 99 Percentile in JEE Main 2022?**

Click here to join the *most trusted* online Maths Crash Course

### Important Topics in STRAIGHT LINE

|                               | 2019 | 2020 | 2021 | Total | Covered                  |
|-------------------------------|------|------|------|-------|--------------------------|
| Coordinate System 🔥           | 9    | 5    | 7    | 21    | <input type="checkbox"/> |
| Basic Forms of Straight Line  | 2    | 1    | 5    | 8     | <input type="checkbox"/> |
| Angle between Lines           | 3    | 0    | 0    | 3     | <input type="checkbox"/> |
| Derived Forms of Line         | 1    | 2    | 1    | 4     | <input type="checkbox"/> |
| Position of a point           | 1    | 1    | 0    | 2     | <input type="checkbox"/> |
| Point and Line                | 1    | 2    | 4    | 7     | <input type="checkbox"/> |
| Concurrency & Family of Lines | 1    | 0    | 0    | 1     | <input type="checkbox"/> |
| Angle bisector                | 0    | 0    | 1    | 1     | <input type="checkbox"/> |
| Locus                         | 2    | 1    | 1    | 4     | <input type="checkbox"/> |

### Important Topics in CIRCLE

|                                      | 2019 | 2020 | 2021 | Total | Covered                  |
|--------------------------------------|------|------|------|-------|--------------------------|
| General Equation of 2nd degree curve | 2    | 0    | 2    | 4     | <input type="checkbox"/> |
| Equation of Circle & its intercept   | 1    | 0    | 3    | 4     | <input type="checkbox"/> |
| Position of point                    | 0    | 0    | 2    | 2     | <input type="checkbox"/> |
| line and circle                      | 2    | 2    | 2    | 6     | <input type="checkbox"/> |
| Tangent to circle 🔥                  | 1    | 3    | 5    | 9     | <input type="checkbox"/> |
| Pair of Tangents                     | 0    | 0    | 3    | 3     | <input type="checkbox"/> |
| Director Circle                      | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Chord of Contact                     | 0    | 1    | 0    | 1     | <input type="checkbox"/> |
| Chord with given Middle Point        | 1    | 0    | 1    | 2     | <input type="checkbox"/> |
| Intersection of Circles 🔥            | 5    | 1    | 5    | 11    | <input type="checkbox"/> |
| Common Tangents                      | 3    | 0    | 2    | 5     | <input type="checkbox"/> |
| Common Chord                         | 1    | 0    | 0    | 1     | <input type="checkbox"/> |
| Family of Circle                     | 0    | 1    | 0    | 1     | <input type="checkbox"/> |
| Pole and Polar                       | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Radical axis and centre              | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Coaxial systems of circles           | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Locus 🔥                              | 5    | 0    | 4    | 9     | <input type="checkbox"/> |

**Targeting 99 Percentile in JEE Main 2022?**

Click here to join the *most trusted* online Maths Crash Course

### Important Topics in PARABOLA

|                                      | 2019 | 2020 | 2021 | Total | Covered                  |
|--------------------------------------|------|------|------|-------|--------------------------|
| General Equation of 2nd degree curve | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| standard equation of parabola        | 3    | 3    | 1    | 7     | <input type="checkbox"/> |
| Position of point                    | 1    | 0    | 0    | 1     | <input type="checkbox"/> |
| Chord of parabola                    | 2    | 1    | 1    | 4     | <input type="checkbox"/> |
| Line and parabola                    | 2    | 1    | 0    | 3     | <input type="checkbox"/> |
| Tangent to Parabola                  | 2    | 1    | 2    | 5     | <input type="checkbox"/> |
| Properties of Tangent                | 0    | 1    | 0    | 1     | <input type="checkbox"/> |
| Common Tangent                       | 5    | 1    | 2    | 8     | <input type="checkbox"/> |
| Normal to Parabola                   | 0    | 2    | 4 🧨  | 6     | <input type="checkbox"/> |
| Conormal Points                      | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Pair of Tangents                     | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Director Circle                      | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Chord of Contact                     | 0    | 0    | 1    | 1     | <input type="checkbox"/> |
| Chord with given Middle Point        | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Diameter to parabola                 | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Reflection property                  | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Locus                                | 0    | 1    | 3    | 4     | <input type="checkbox"/> |

### Important Topics in ELLIPSE

|                                      | 2019 | 2020 | 2021 | Total | Covered                  |
|--------------------------------------|------|------|------|-------|--------------------------|
| General Equation of 2nd degree curve | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Equation of Ellipse                  | 4    | 4    | 2    | 10    | <input type="checkbox"/> |
| Position of point                    | 0    | 1    | 1    | 2     | <input type="checkbox"/> |
| Auxillary Circle                     | 0    | 1    | 0    | 1     | <input type="checkbox"/> |
| Chord of ellipse                     | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Line and ellipse                     | 0    | 1    | 2    | 3     | <input type="checkbox"/> |
| Tangent to ellipse 🧨                 | 5    | 0    | 6    | 11    | <input type="checkbox"/> |
| Properties of Tangent                | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Common Tangent                       | 0    | 0    | 2    | 2     | <input type="checkbox"/> |
| Normal to ellipse                    | 0    | 3    | 0    | 3     | <input type="checkbox"/> |
| Conormal Points                      | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Pair of Tangents                     | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Director Circle                      | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Chord of Contact                     | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Chord with given Middle Point        | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Diameter to ellipse                  | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Reflection property                  | 0    | 1    | 1    | 2     | <input type="checkbox"/> |
| Locus                                | 0    | 0    | 1    | 1     | <input type="checkbox"/> |
| Concyclic points on ellipse          | 0    | 0    | 0    | 0     | <input type="checkbox"/> |

**Targeting 99 Percentile in JEE Main 2022?**

Click here to join the *most trusted* online Maths Crash Course

### Important Topics in HYPERBOLA

|                                      | 2019 | 2020 | 2021 | Total | Covered                  |
|--------------------------------------|------|------|------|-------|--------------------------|
| General Equation of 2nd degree curve | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Equation of hyperbola 🔥              | 6    | 3    | 2    | 11    | <input type="checkbox"/> |
| Position of point                    | 1    | 0    | 0    | 1     | <input type="checkbox"/> |
| Auxillary Circle                     | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Chord of hyperbola                   | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Line and hyperbola                   | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Tangent to hyperbola                 | 2    | 1    | 2    | 5     | <input type="checkbox"/> |
| Properties of Tangent                | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Common Tangent                       | 1    | 1    | 1    | 3     | <input type="checkbox"/> |
| Normal to hyperbola                  | 1    | 2    | 1    | 4     | <input type="checkbox"/> |
| Conormal Points                      | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Pair of Tangents                     | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Director Circle                      | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Chord of Contact                     | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Chord with given Middle Point        | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Diameter to hyperbola                | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Reflection property                  | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Locus                                | 0    | 0    | 4    | 4     | <input type="checkbox"/> |
| Concyclic points on hyperbola        | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Asymptotes                           | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Rectangular hyperbola                | 0    | 0    | 0    | 0     | <input type="checkbox"/> |

**Targeting 99 Percentile in JEE Main 2022?**

Click here to join the *most trusted* online Maths Crash Course

# MOST DETAILED ANALYSIS OF JEE MAIN MATH

We recommend to give more weightage to 2019 & 2021 as the paper consisted of 30 Questions as compared to 25 in 2020  
 Number of Papers – 2019 (16 Papers) 2020 (16 Papers) and 2021 (26 Papers) – Total of 58 Papers in 3 years  
 The table shows the number of questions that came from each chapter in the respective years



## WEIGHTAGE OF CHAPTERS IN VECTOR ALGEBRA

| Chapter                    | Opportunity | Overall | 2021 | 2020 | 2019 |
|----------------------------|-------------|---------|------|------|------|
| Three-Dimensional Geometry | Scoring 🚀   | 106     | 56   | 19   | 31   |
| Vector Algebra             |             | 64      | 35   | 13   | 16   |

Just 2 Chapters and they consist of 10 percent of the paper. Practice them

Even if you are not good at them. Short cut to a good score.

Vector 3D is a big chapter but pattern based.

### Important Topics in VECTORS

|                       | 2019 | 2020 | 2021 | Total | Covered                  |
|-----------------------|------|------|------|-------|--------------------------|
| Algebra of Vectors    | 10   | 3    | 10   | 23    | <input type="checkbox"/> |
| Product of 2 vectors  | 3    | 6    | 16 🔥 | 25    | <input type="checkbox"/> |
| Scalar Triple Product | 2    | 1    | 5    | 8     | <input type="checkbox"/> |
| Vector Triple Product | 1    | 3    | 4    | 8     | <input type="checkbox"/> |

### Important Topics in VECTOR 3D

|                                        | 2019 | 2020 | 2021 | Total | Covered                  |
|----------------------------------------|------|------|------|-------|--------------------------|
| Basics of point in 3 dimensions        | 2    | 0    | 0    | 2     | <input type="checkbox"/> |
| Direction Cosines and Direction Ratios | 2    | 0    | 3    | 5     | <input type="checkbox"/> |
| Line in Space                          | 6    | 6    | 13   | 25    | <input type="checkbox"/> |
| Plane in Space 🔥                       | 16   | 11   | 26   | 53    | <input type="checkbox"/> |
| Line and Plane                         | 5    | 2    | 14   | 21    | <input type="checkbox"/> |

# 10 PERCENT PER PAPER

**Targeting 99 Percentile in JEE Main 2022?**

Click here to join the *most trusted* online Maths Crash Course

# MOST DETAILED ANALYSIS OF JEE MAIN MATH

We recommend to give more weightage to 2019 & 2021 as the paper consisted of 30 Questions as compared to 25 in 2020  
Number of Papers – 2019 (16 Papers) 2020 (16 Papers) and 2021 (26 Papers) – Total of 58 Papers in 3 years  
The table shows the number of questions that came from each chapter in the respective years



## WEIGHTAGE OF CHAPTERS IN TRIGONOMETRY

| Chapter                           | Opportunity | Overall | 2021 | 2020 | 2019 |
|-----------------------------------|-------------|---------|------|------|------|
| Inverse Trigonometric Functions   | Scoring 🚀   | 31      | 19   | 4    | 8    |
| Trigonometric Equations           |             | 23      | 11   | 4    | 8    |
| Heights and Distances             | Scoring 🚀   | 19      | 8    | 4    | 7    |
| Trigonometric Ratios & Identities |             | 18      | 7    | 4    | 7    |
| Properties of Triangles           |             | 10      | 5    | 0    | 5    |

### Important Topics in TRIGONOMETRIC RATIOS & IDENTITIES

|                                             | 2019 | 2020 | 2021 | Total | Covered                  |
|---------------------------------------------|------|------|------|-------|--------------------------|
| Measurement of Angles                       | 1    | 0    | 0    | 1     | <input type="checkbox"/> |
| Basic Identities & T Ratios                 | 1    | 0    | 2    | 3     | <input type="checkbox"/> |
| Sum and Difference & Multiple angle Formula | 2    | 1    | 2    | 5     | <input type="checkbox"/> |
| Transformation Formulas                     | 0    | 1    | 2    | 3     | <input type="checkbox"/> |
| T-Ratios of Multiple & sub multiple angles  | 1    | 0    | 0    | 1     | <input type="checkbox"/> |
| Maximum and Minimum Values                  | 1    | 1    | 1    | 3     | <input type="checkbox"/> |
| Sum of three or more angles                 | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Trigonometric Series                        | 1    | 1    | 0    | 2     | <input type="checkbox"/> |
| Number of Solutions                         | 0    | 0    | 0    | 0     | <input type="checkbox"/> |

### Important Topics in TRIGONOMETRIC EQUATIONS

|                                    | 2019 | 2020 | 2021 | Total | Covered                  |
|------------------------------------|------|------|------|-------|--------------------------|
| Basic                              | 0    | 3    | 0    | 3     | <input type="checkbox"/> |
| Solving Trigonometric Equation     | 7    | 1    | 10   | 18    | <input type="checkbox"/> |
| Solving Trigonometric Inequalities | 1    | 0    | 1    | 2     | <input type="checkbox"/> |

### Important Topics in INVERSE TRIGONOMETRIC FUNCTION

|                                          | 2019 | 2020 | 2021 | Total | Covered                  |
|------------------------------------------|------|------|------|-------|--------------------------|
| Principal Value and Basics               | 5    | 1    | 3    | 9     | <input type="checkbox"/> |
| T inverse T property                     | 0    | 0    | 1    | 1     | <input type="checkbox"/> |
| Converting one Inverse function to other | 1    | 2    | 4    | 7     | <input type="checkbox"/> |
| Negative and reciprocal Properties       | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Sum of complementary angles              | 1    | 0    | 1    | 2     | <input type="checkbox"/> |
| Sum and difference of angles             | 0    | 1    | 6    | 7     | <input type="checkbox"/> |
| Multiple Angles                          | 0    | 0    | 0    | 0     | <input type="checkbox"/> |
| Infinite Series                          | 1    | 0    | 4    | 5     | <input type="checkbox"/> |