

# ALL INDIA INTERACTIVE MATHEMATICS

## TEST SERIES 2025

**Starts** 22<sup>nd</sup> December

**8 Tests | 4 sectionwise + 4 Full Length**



AHMEDABAD



BENGALURU



BHOPAL



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## ALL INDIA TEST SERIES



Is the specialty of Vision IAS. Every year thousands of students utilize Vision IAS Test Series, based on **INNOVATIVE ASSESSMENT SYSTEM™** to improve their scores. We take the Test Series with utmost seriousness.

## APPROACH AND STRATEGY:



Our simple, practical and focused approach will help aspirants understand the demand of UPSC exam effectively. Our strategy is to constantly innovate to keep the preparation process dynamic and give personalized attention to individual aspirants based on factors like core competence, availability of time and resource, and the requirement of Civil Service Exam. Our Interactive Learning approach (Email / Telephonic Discussion of Experts with Aspirants) will continuously improve the aspirant's performance and move their preparation in the right direction.

## FLEXIBILITY:



We also give our students the flexibility of personalized scheduling. They can reschedule their tests, based on their study plan for the examination. Further, students can either come to one of our centers to write the tests or can do so at a place of their convenience, and upload the scanned copies of their answer sheets for evaluation.

Number of Mock Tests:	Module No.	Fee Structure (including all taxes)
8	2565	Rs. 11000
Nature:	<b>Flexible- Date of Mock Test:</b> Reschedule on the demand of the aspirants. <b>(POSTPONE, BUT NOT PREPONE)</b> <b>Download Test Papers and material from Vision IAS Online Platform</b>	

## WHAT YOU WILL GET:



Login id & Password for performance analysis of aspirants (**Innovative Assessment System**).



**Consolidated Question Paper-cum-Answer booklet (8 Mock Tests: PDF Files).**



Evaluated Answer Booklet by experts with proper feedback, comments & guidance.



Answer format (Synopsis) of Mock Test paper.



Analysis of Mock Test papers based on difficulty level & nature of questions.



Supplementary material.

## INNOVATIVE ASSESSMENT SYSTEM:



Static & dynamic Potential of Mock test papers (Scoring Potential), Macro & Micro performance Analysis of aspirants, Section wise analysis, Difficulty Analysis, All India Rank, comparison with toppers, Geographical Analysis, Integrated Score Card, Analysis of Mock Test papers based on difficulty level & nature of questions etc.



- Online/distance learning students can download Question cum answer booklet and approach-answer-analysis of mock test papers from Vision IAS online Platform.
- Question cum answer booklet, approach - answer - analysis of mock test papers will NOT be dispatched.
- Supplementary material/Reference material/Support material will be provided in PDF format only and will not be dispatched.
- Information related test discussions will be notified on the home page of student's online platform.

## DISCLAIMER



- Vision IAS material is for the individual only. In case a student is found involved in any violation of copyrights of Vision IAS material, the admission to the test series will be cancelled.
- The student needs to provide UPSC roll no. and other details to **registration@visionias.in**
- We have **no facility of fee payment in cash.**
- Fee once paid is non-refundable and non-transferable in all circumstances.
- VISION IAS reserves all rights related to admission.
- VISION IAS reserves all rights to make any changes in test series schedule/test writing days and timing etc., if need so arises.
- **Vision IAS test centers will be CLOSED on THURSDAYS for test writing.**

## SCHEDULE, CONTENT & REFERENCE

 <b>TEST No. (Test)</b>	 <b>Date</b>	 <b>Topics covered</b>	 <b>Sources/References</b> (Selected Chapter by Expert)
<b>Test 1 [3495]</b>	<b>December 22, 2024</b>	<p><b>(1) Linear Algebra:</b>                      Vector spaces over <math>\mathbb{R}</math> and <math>\mathbb{C}</math>, linear dependence and independence, subspaces, bases, dimensions, Linear transformations, rank and nullity, matrix of a linear transformation.</p> <p>Algebra of Matrices; Row and column reduction, Echelon form, congruence's and similarity; Rank of a matrix; Inverse of a matrix; Solution of system of linear equations; Eigenvalues and eigenvectors, characteristic polynomial, Cayley-Hamilton theorem, Symmetric, skew-symmetric, Hermitian, skew- Hermitian, orthogonal and unitary matrices and their eigenvalues.</p> <p><b>(2) Calculus:</b>                      Real numbers, functions of a real variable, limits, continuity, differentiability, mean-value theorem, Taylor's theorem with remainders, indeterminate forms, maxima and minima, asymptotes; Curve tracing; Functions of two or three variables; Limits, continuity, partial derivatives, maxima and minima, Lagrange's method of multipliers, Jacobian.</p> <p>Riemann's definition of definite integrals; Indefinite integrals; Infinite and improper integral; Double and triple integrals (evaluation techniques only); Areas, surface and volumes.</p> <p><b>(3) Analytic Geometry:</b>                      Cartesian and polar coordinates in three dimensions, second degree equations in three variables, reduction to Canonical forms; straight lines, shortest distance between two skew lines, Plane, sphere, cone, cylinder, paraboloid, ellipsoid, hyperboloid of one and two sheets and their properties.</p>	<p><b>(1) Linear Algebra:</b></p> <ul style="list-style-type: none"> <li>➤ Krishna series on Matrices</li> <li>➤ Schaum Series by Seymour Lipschutz</li> </ul> <p><b>(2) Calculus:</b></p> <ul style="list-style-type: none"> <li>➤ Krishna Series on Differential calculus</li> <li>➤ Krishna Series on Integral calculus</li> <li>➤ Mathematical Analysis by S C Malik and Savita Arora</li> <li>➤ Elements of Real Analysis by Shanti Narayan and M D Raisinghania</li> </ul> <p><b>(3) Analytic Geometry:</b></p> <ul style="list-style-type: none"> <li>➤ Krishna Series on Analytical Geometry</li> <li>➤ Krishna Series on Analytical Solid Geometry</li> <li>➤ Analytic Geometry by PN Chatterjee.</li> </ul>
<b>Test 2 [3496]</b>	<b>JANUARY 19, 2025</b>	<p><b>(4) Ordinary Differential Equations:</b>                      Formulation of differential equations; Equations of first order and first degree, integrating factor; Orthogonal trajectory; Equations of first order but not of first degree, Clairaut's equation, singular solution.</p> <p>Second and higher order liner equations with constant coefficients, complementary</p>	<p><b>(4) Ordinary Differential Equations:</b></p> <ul style="list-style-type: none"> <li>➤ Ordinary and Partial Differential Equations by M D Raisinghania</li> <li>➤ Advanced Differential Equations by MD Raisinghania</li> </ul>

		<p>function, particular integral and general solution.</p> <p>Section order linear equations with variable coefficients, Euler-Cauchy equation; Determination of complete solution when one solution is known using method of variation of parameters.</p> <p>Laplace and Inverse Laplace transforms and their properties, Laplace transforms of elementary functions. Application to initial value problems for 2nd order linear equations with constant coefficients.</p> <p><b>(5) Dynamics and Statics:</b>  Rectilinear motion, simple harmonic motion, motion in a plane, projectiles; Constrained motion; Work and energy, conservation of energy; Kepler's laws, orbits under central forces.</p> <p>Equilibrium of a system of particles; Work and potential energy, friction, Common catenary; Principle of virtual work; Stability of equilibrium, equilibrium of forces in three dimensions.</p> <p><b>(6) Vector Analysis:</b>  Scalar and vector fields, differentiation of vector field of a scalar variable; Gradient, divergence and curl in cartesian and cylindrical coordinates; Higher order derivatives; Vector identities and vector equation.</p> <p>Application to geometry: Curves in space, curvature and torsion; Serret-Frenet's formulae. Gauss and Stokes' theorems, Green's identities.</p>	<p><b>(5) Dynamics and Statics :</b></p> <ul style="list-style-type: none"> <li>➤ Krishna Series on Statics</li> <li>➤ Krishna Series on Dynamics</li> </ul> <p><b>(6) Vector Analysis :</b></p> <ul style="list-style-type: none"> <li>➤ Krishna Series on Vector Calculus</li> <li>➤ Schaum's outline on Vector Analysis</li> </ul>
<p><b>Test 3</b> <b>[3497]</b></p>	<p><b>FEBRUARY</b> <b>16, 2025</b></p>	<p><b>(1) Algebra :</b>  Groups, subgroups, cyclic groups, cosets, Lagrange's Theorem, normal subgroups, quotient groups, homomorphism of groups, basic isomorphism theorems, permutation groups, Cayley's theorem.</p> <p>Rings, subrings and ideals, homomorphisms of rings; Integral domains, principal ideal domains, Euclidean domains and unique factorization domains; Fields, quotient fields.</p> <p><b>(2) Real Analysis :</b>  Real number system as an ordered field with least upper bound property; Sequences, limit of a sequence, Cauchy sequence, completeness of real line; Series and its convergence, absolute and conditional convergence of series of real and complex terms, rearrangement of series. Continuity and uniform continuity of functions, properties of continuous functions on compact sets.</p>	<p><b>(1) Algebra :</b></p> <ul style="list-style-type: none"> <li>➤ Abstract Algebra, Group Theory by R Kumar</li> <li>➤ Abstract Algebra, Ring Theory by R Kumar</li> <li>➤ Contemporary Abstract Algebra by Joseph Gallian</li> </ul> <p><b>(2) Real Analysis :</b></p> <ul style="list-style-type: none"> <li>➤ Mathematical Analysis by S C Malik and Savita Arora</li> <li>➤ Elements of Real Analysis by Shanti Narayan and M D Raisinghanian</li> </ul> <p><b>(3) Complex Analysis :</b></p> <ul style="list-style-type: none"> <li>➤ Krishna Series</li> </ul>

		<p>Riemann integral, improper integrals; Fundamental theorems of integral calculus.</p> <p>Uniform convergence, continuity, differentiability and integrability for sequences and series of functions; Partial derivatives of functions of several (two or three) variables, maxima and minima.</p> <p><b>(3) Complex Analysis:</b> Analytic function, Cauchy–Riemann equations, Cauchy’s theorem, Cauchy’s integral formula, power series, representation of an analytic function, Taylor’s series; Singularities; Laurent’s series; Cauchy’s residue theorem; Contour integration.</p>	
<b>Test 4 [3498]</b>	<b>MARCH 16, 2025</b>	<p><b>(4) Linear Programming:</b> Linear programming problems, basic solution, basic feasible solution and optimal solution; Graphical method and simplex method of solutions; Duality. Transportation and assignment problems.</p> <p><b>(5) Partial Differential Equations:</b> Family of surfaces in three dimensions and formulation of partial differential equations; Solution of quasilinear partial differential equations of the first order, Cauchy’s method of characteristics; Linear partial differential equations of the second order with constant coefficients, canonical form; Equation of a vibrating string, heat equation, Laplace equation and their solutions.</p> <p><b>(6) Numerical Analysis and Computer Programming:</b> Numerical methods: Solution of algebraic and transcendental equations of one variable by bisection, Regula–Falsi and Newton–Raphson methods, solution of system of linear equations by Gaussian Elimination and Gauss–Jordan (direct), Gauss–Seidel (iterative) methods. Newton’s (forward and backward) and interpolation, Lagrange’s interpolation. Numerical integration: Trapezoidal rule, Simpson’s rule, Gaussian quadrature formula. Numerical solution of ordinary differential equations : Euler and Runge Kutta methods. Computer Programming : Binary system; Arithmetic and logical operations on numbers; Octal and Hexadecimal Systems; Conversion to and from decimal Systems; Algebra of binary numbers. Elements of computer systems and concept of memory; Basic logic gates</p>	<p><b>(4) Linear Programming:</b></p> <ul style="list-style-type: none"> <li>➤ Linear Programming and Game Theory by Lakshmishree Bandopadhyay</li> <li>➤ Krishna Series</li> </ul> <p><b>(5) Partial Differential Equations:</b></p> <ul style="list-style-type: none"> <li>➤ Ordinary and Partial Differential Equations by M D Raisinghanian</li> <li>➤ Advanced Differential Equations by M D Raisinghanian</li> <li>➤ Engineering Maths by Grewal</li> </ul> <p><b>(6) Numerical Analysis and Computer Programming:</b></p> <ul style="list-style-type: none"> <li>➤ Computer Based Numerical And Statistical Techniques by M.Goyal</li> <li>➤ Numerical Methods by Iyengar and Jain</li> <li>➤ Digital Logic And Computer Design by M. Morris Mano</li> </ul> <p><b>(7) Mechanics and Fluid Dynamics :</b></p> <ul style="list-style-type: none"> <li>➤ Krishna Series</li> <li>➤ Fluid Dynamics by MD Raisinghanian</li> </ul>

		<p>and truth tables, Boolean algebra, normal forms.</p> <p>Representation of unsigned integers, signed integers and reals, double precision reals and long integers. Algorithms and flow charts for solving numerical analysis problems.</p> <p><b>(7) Mechanics and Fluid Dynamics :</b></p> <p>Generalised coordinates; D'Alembert's principle and Lagrange's equations; Hamilton equations; Moment of inertia; Motion of rigid bodies in two dimensions.</p> <p>Equation of continuity; Euler's equation of motion for inviscid flow; Stream-lines, path of a particle; Potential flow; Two-dimensional and axisymmetric motion; Sources and sinks, vortex motion; Navier-Stokes equation for a viscous fluid.</p>	
<b>Test 5 [3499]</b>	<b>JUNE 15, 2025</b>	<b>Complete syllabus of Mathematics Paper I (Full Length Test)</b>	
<b>Test 6 [3500]</b>	<b>JUNE 29, 2025</b>	<b>Complete Syllabus of Mathematics Paper II (Full Length Test)</b>	
<b>Test 7 [3501]</b>	<b>JULY 13, 2025</b>	<b>Complete syllabus of Mathematics Paper I (Full Length Test)</b>	
<b>Test 8 [3502]</b>	<b>JULY 27, 2025</b>	<b>Complete Syllabus of Mathematics Paper II (Full Length Test)</b>	

## FOCUS:



Testing the understanding of the questions and concepts, finding and highlighting the weak and strong areas, testing the proficiency in calculation and recommending reading and practice areas.

## PHILOSOPHY:



The pattern of UPSC Mains exam is very dynamic and unpredictable. Therefore Mock Test papers should be designed based on latest pattern of UPSC.

## UPSC CRITERIA:



### Criteria for assessment of candidate performance in the written IAS exam as per UPSC instruction:

“The main Examination is intended to assess the overall intellectual traits and depth of understanding of candidates rather than merely the range of their information and memory”. -**Union Public Service Commission (UPSC)**

## METHODOLOGY:



**Methodology for evaluation of Answer sheet:** Our expert will evaluate aspirant's answer sheet on following indicators using their experience in the field of UPSC.

EVALUATION INDICATORS
1. Accuracy of Answer
2. Adoption of appropriate and logical procedure
3. Mentioning of all the steps and theorems
4. Clear presentation
MARKS

### Score: Scale: 1- 5:



- Total Marks in the question has been given on proper consideration of weightage of every evaluation indicators based on nature of the questions and UPSC experience of the expert.
- The score of every indicator for any question will highlight candidate's competence performance (for understanding of the level of quality of the question and required action plans).



## BASIC UNDERSTANDING OF FOLLOWING DESIGNED COMPETENCIES:



### **Accuracy of Answer:**

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- › To verify that the solution matches the desired answer at every key junction and highlight the mistakes which have resulted in deviations (if any).



### **Adoption of appropriate and logical**

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- › The process of reaching the desired answer also holds significant weight, thus it is important to approach the solution systematically.
- › The procedure also holds heavy importance in partial marking in case of mistakes or partially attempted problems.



### **Mentioning of all the steps and**

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- › Mentioning the formulas that one uses before applying them. This lends credibility to the solution and also improves the overall readability of the answer.



### **Clear**

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- › Using clear headings and sub-headings, boxing important formulae and pointers and presenting the solution in an uncluttered manner.

# Heartiest Congratulations

to all Successful Candidates



1  
AIR

**Aditya Srivastava**

16

in TOP 20 Selections in CSE 2023

from various programs of Vision IAS



2  
AIR

**Animesh  
Pradhan**



5  
AIR

**Ruhani**



6  
AIR

**Srishti  
Dabas**



7  
AIR

**Anmol  
Rathore**



9  
AIR

**Nausheen**



10  
AIR

**Aishwaryam  
Prajapati**

39  
Selections

in TOP 50

in CSE 2022



1  
AIR

**Ishita  
Kishore**



2  
AIR

**Garima  
Lohia**



3  
AIR

**Uma  
Harathi N**

1  
AIR



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**EXAMINATION 2020**



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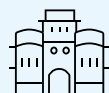
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