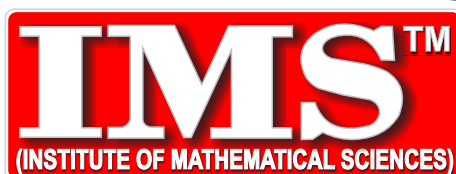


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IAS/IFoS MATHEMATICS

by **K. Venkanna**

(Optional)

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AVAILABLE COURSES

Foundation Course (Offline/Online)

- Regular Classroom
- Quick Learning Programme (QLP)
- Fast Track Classes

Study Materials

Test Series (Offline/Online)

CRASH COURSE

QLP (QUICK LEARNING PROGRAMME)

PRACTICE THROUGH PREPARATION

23



ONLINE OFFLINE

NOVEMBER

Duration

4-5 Months

Time

9 AM Onwards



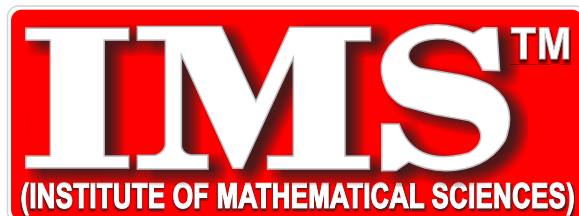
Register Now

*Admissions open, limited seats, available on first come first serve basis.

NOTE: This course is mainly designed for the students who have already completed their syllabus once (or) have written the mains (or) have confidence in being able to understand.

OLD RAJINDER NAGAR, DELHI

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QLP (QUICK LEARNING PROGRAMME)

PRACTICE THROUGH PREPARATION

FEATURES

Why QLP?

You have already done the hard part. You have walked through the syllabus, filled notebooks, and perhaps even faced the Mains. **Now comes the question every serious aspirant asks:** "I know it, but can I write it, in time, with clarity and confidence?"

QLP is built to answer that question with a resounding yes. This is not another course that teaches you the syllabus again. It is a **training ground** where knowledge becomes performance, and where practice turns preparation into marks.

Our Course Objectives

Built for the ones who are ready to rise. QLP is designed for aspirants who have completed the syllabus at least once, have already appeared in the Mains, or simply feel confident in their understanding and want to sharpen it into a winning edge.

Write better, present better, manage time better. A brilliant answer that runs out of time is a lost opportunity. We help you shape answers that are crisp, structured and impactful, and finished within the clock.

Solve with speed and precision. Step by step, you will build the ability to tackle complex problems calmly and accurately under real exam pressure.

Connect the dots across units. The toughest questions rarely stay in one chapter. We give special attention to comparative questions and to interlinking different units, so you can think the way the examiner expects.



How Every Class Unfolds

Each session lasts **2 to 2.5 hours**, and every minute is designed to work for you:

1. **Warm-up and recap (first 30 minutes):** A quick, focused revision of the tasks assigned in the day schedule, so your concepts are fresh before you begin.
2. **The one-hour challenge:** Practice sheets are handed out in class, and you solve them within a strict one-hour limit, just as you will in the exam hall.
3. **Submission:** Your answer sheets are collected, so every attempt counts.
4. **Live evaluation:** Some Students copy(s) are picked at random, Evaluated on spot as per UPSC criteria and displayed on the smart board. Everyone learns from real mistakes and real strengths, and the discussion that follows is open, honest and insightful.
5. **Extra practice at home:** Additional question sheets are given as take home assignments wherever needed, so your learning never stops at the classroom door.
6. **Schedule:** Monday to Friday, for 4 to 5 months of steady, disciplined practice.

More Than a Classroom: Extra Support for Your Journey

- **A community that cheers you on:** Join our study group or online community on Telegram to stay motivated, share doubts and learn together.
- **Freedom to change your path:** Want to move to a Regular or Fast Track course? You can, with the applicable additional charges.
- **Learn your way:** Switch between online and offline modes whenever it suits you, and back again.
- **Weekend backup:** Missed something? Saturday and Sunday sessions are there to help you cover your backlogs without stress.

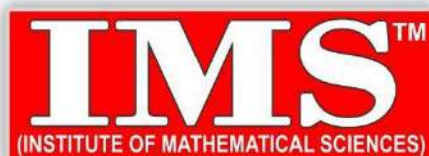
Please note: This programme focuses purely on practice through Modular tests and does not include study materials.

What You Will Walk Away With

- Confidence that comes from doing, muscle memory that makes writing automatic, and performance that shows on paper.
- A habit of reflection: review your progress, learn from every mistake and keep improving.
- A real shot at your goal: the preparation, the polish and the self-belief to score maximum marks in UPSC Mains.

Available in both Online & Offline modes

Don't just study harder, Practice smarter, Join QLP and turn your preparation into results



QLP (QUICK LEARNING PROGRAMME)

PRACTICE THROUGH PREPARATION

Tentative Plan for QLP Classes

Ordinary Differential Equations (ODE)

Days	Topics to be Covered
Day-1	Formulation of differential equations. Equations of first order and first degree: ➤ Variables and separable ➤ Homogeneous & Non-Homogeneous ➤ Exact differential equations ➤ Linear differential equations
Day-2	Solution of Linear differential equations with constant coefficient and Euler-Cauchy equation and Legendre equation
Day-3	Solution of second order linear equations with variable coefficients
Day-4	Equations of first order but not of first degree
Day-5	Clairaut's equation and reduction of Clairaut's equation; Singular solution; Orthogonal trajectory
Day-6	Laplace and Inverse Laplace transforms and their properties; Laplace transforms of elementary functions
Day-7	Solution of initial value problems for 2nd order linear equations with constant coefficients by using Laplace transforms
Day-8	ODE Test (Final)

Partial Differential Equations (PDE)

Days	Topics to be Covered
Day-1	Family of surfaces in three dimensions and formulation of partial differential equations and Solution of quasilinear partial differential equations of the first order
Day-2	Solution of quasilinear partial differential equations of the first order ➤ Integral Surfaces (Solution Surfaces through given curve) ➤ Orthogonal Surfaces
Day-3	Linear partial differential equations of the second order with constant coefficients ➤ Homogeneous equations ➤ Non-Homogeneous equations
Day-4	Solution of second order Linear PDE with variable coefficients and reduction to Canonical form
Day-5	1. Application of PDE ➤ Equation of a vibrating string equation
Day-6	2. Application of PDE ➤ Equation of a heat equation ➤ Laplace equation and their solutions

Day-7	Solution of non-linear partial differential equations of the first order ➤ Charpit's Method ➤ Jacobi Method ➤ Cauchy's method of characteristics
Day-8	PDE Test (Final)

Test-1 ODE & PDE Combined Test

Linear Algebra

Days	Topics to be Covered
Day-1	Vector spaces over Q, R and C and Subspaces, Linear dependence and independence
Day-2	Basis and Dimension
Day-3	Linear transformations
Day-4	Rank and nullity and Matrix of a linear transformation-I
Day-5	Rank and nullity and Matrix of a linear transformation-II
Day-6	Algebra of Matrices, Row and column reduction, Echelon form, Rank of a matrix, Inverse of a matrix, Symmetric, Skew-symmetric, Hermitian, Skew-Hermitian, Orthogonal and unitary matrices
Day-7	Solution of system of linear equations and Eigenvalues and eigenvectors and Cayley-Hamilton theorem
Day-8	Similarity of Matrices
Day-9	Linear Algebra Test (Final)

Modern Algebra

Days	Topics to be Covered
Day-1	Groups
Day-2	Order of an element
Day-3	Permutation groups
Day-4	Subgroups
Day-5	Cosets, Lagrange's Theorem
Day-6	Cyclic groups
Day-7	Normal subgroups and Quotient Group etc.
Day-8	Rings, Integral domains and Fields
Day-9	Subrings and Characteristic of a ring
Day-10	Ideals, Principal ideal domains and Quotient Ring etc.
Day-11	Homomorphism of groups, Basic isomorphism theorems and Cayley's theorem-I
Day-12	Homomorphism of groups, Basic isomorphism theorems and Cayley's theorem-II
Day-13	Homomorphisms of rings etc.
Day-14	Euclidean domains
Day-15	unique factorization domains
Day-16	Modern Algebra Test (Final)

Test-2 LA & MA Combined Test

Linear Programming Problems (LPP)

Days	Topics to be Covered
Day-1	Introduction to Linear programming problems (LPP) ➤ Formulation of LPP ➤ Solution of LPP by using Graphical method Insights into simplex method ➤ Standard and canonical forms ➤ Basic Solution, Basic feasible solution, basic infeasible solution, Degenerate and non-degenerate etc. ➤ Initial basic feasible solution and optimal basic feasible solution etc.
Day-2	Simplex method ➤ Direct method ➤ Big-M method ➤ Two phase method
Day-3	Duality
Day-4	Transportation problems (TPP)
Day-5	Assignment problems
Day-6	LPP Test (Final)

Analytic Geometry

Days	Topics to be Covered
Day-1	Introduction to coordinates systems and locus in three dimensions and direction cosines and direction ratios etc.
Day-2	Plane
Day-3	Straight lines
Day-4	Sphere
Day-5	Cone
Day-6	Cylinder
Day-7	Conicoid-I
Day-8	Conicoid-II
Day-9	Conicoid-III
Day-10	Analytic Geometry Test (Final)

Test-3 LPP & Analytic Geometry Combined Test

Real Analysis & Calculus

Days	Topics to be Covered
Day-1	• Real number system and their properties • Sequences of real numbers ➤ Limit of a sequence ➤ Convergence of sequence and increasing and decreasing sequences etc. ➤ Cauchy sequence
Day-2	Series of real numbers ➤ Convergence ➤ Absolute and conditional convergence of series of real numbers etc. ➤ Rearrangement of series etc.
Day-3	Functions of single variables: ➤ Limits ➤ Continuity and uniform continuity ➤ Differentiability

Day-4	Functions of single variables: ➤ Increasing and decreasing ➤ Indeterminate forms ➤ maxima and minima ➤ Mean value theorems
Day-5	Functions of two or three variables: ➤ Limits ➤ Continuity ➤ Partial derivatives
Day-6	Functions of two or three variables ➤ Maxima and minima ➤ Lagrange's method of multipliers ➤ Jacobian
Day-7	Riemann integral and Fundamental theorems of integral calculus etc.
Day-8	Improper integrals
Day-9	Sequence and series of functions ➤ Point wise convergence ➤ Uniform convergence ➤ Continuity ➤ Differentiability and integrability
Day-10	Curve tracing Multiple integrals: ➤ Double integrals (evaluation techniques only) ➤ Triple integrals (evaluation techniques only)
Day-11	Real Analysis & Calculus Test (Final)

Complex Analysis

Days	Topics to be Covered
Day-1	Introduction to Complex variable functions ➤ Limit ➤ Continuity ➤ Differentiability ➤ Singular points ➤ Cauchy-Riemann equations ➤ Construction of Analytic functions
Day-2	Complex integration, Cauchy's theorem and its applications & Taylor's series; Laurent's series and Singularities
Day-3	Cauchy's residue theorem & Contour integration
Day-4	Miscellaneous
Day-5	Complex Analysis Test (Final)

Test-4	CAL & RA and CA Combined Test
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Vector Analysis

Days	Topics to be Covered
Day-1	Vector differential calculus ➤ Scalar and vector fields ➤ Limits, Continuity and differentiation of vector field of a scalar variable ➤ Tangent Vector to a curve Application to geometry ➤ Curves in space ➤ Curvature and torsion ➤ Serret-Frenet's formulae.
Day-2	➤ Del, Gradient, Divergence and Curl. ➤ Higher order derivatives ➤ Vector identities and vector equations. ➤ Curvilinear coordinates and Level Surfaces
Day-3	Vector integral Calculus ➤ Integrations along the curve ➤ Integrations along the surface ➤ Integrations along the volume
Day-4	Green's theorem and its applications, Gauss-divergence theorem and its applications & Stokes' theorems and its applications-I
Day-5	Green's theorem and its applications, Gauss-divergence theorem and its applications & Stokes' theorems and its applications-II
Day-6	Vector Analysis Test (Final)

Numerical Analysis and Computer programming

Days	Topics to be Covered
Day-1	Numerical methods: ➤ Solution of algebraic and transcendental equations of one variable ➤ Bisection method ➤ Regula-Falsi method ➤ Newton-Raphson methods
Day-2	Solution of system of linear equations Direct methods : ➤ Gaussian elimination ➤ Gauss-Jordan Iterative method : ➤ Gauss-Seidel method
Day-3	Interpolation ➤ Newton's forward interpolation formula ➤ Newton's backward interpolation formula ➤ Lagrange's interpolation
Day-4	Numerical integration: ➤ Trapezoidal rule ➤ Simpson's rules ➤ Gaussian quadrature formula.
Day-5	Numerical solution of ordinary differential equations: ➤ Euler method ➤ Euler- modified method ➤ Runge Kutta-method

Day-6	Computer Programming: ➤ Binary system ➤ Arithmetic and logical operations on numbers ➤ Octal and Hexadecimal systems ➤ Conversion to and from decimal systems ➤ Algebra of binary numbers. ➤ Representation of unsigned integers, Signed integers and reals, Double precision reals and long integers
Day-7	Basic logic gates and truth tables, Boolean algebra, Normal forms and Algorithms and flow charts for solving numerical analysis problems
Day-8	Numerical Analysis & CPP Test (Final)

Test-5 NA & CPP and VA Combined Test

Statics

Days	Topics to be Covered
Day-1	Basic Concepts and Principle of virtual work
Day-2	Common catenary
Day-3	Stability of equilibrium
Day-4	Equilibrium of rigid bodies and Friction
Day-5	Statics Test (Final)

Dynamics

Days	Topics to be Covered
Day-1	Rectilinear motion and Simple harmonic motion
Day-2	Projectiles
Day-3	Constrained motion
Day-4	Orbits under central forces
Day-5	Work and energy, Conservation of energy
Day-6	Dynamics Test (Final)

Test-6 Statics & Dynamics Combined Test

Fluid Dynamics

Days	Topics to be Covered
Day-1	Equation of continuity, Stream-lines, path of a particle, Potential flow
Day-2	Euler's equation of motion for inviscid flow
Day-3	Sources and sinks
Day-4	Vortex motion and Navier-Stokes equation for a viscous fluid
Day-5	Fluid Dynamics Test (Final)

Mechanics

Days	Topics to be Covered
Day-1	Moment of inertia
Day-2	Motion of rigid bodies in two dimensions
Day-3	Generalized coordinates and D' Alembert's principle & Lagrange's equations
Day-4	Hamilton equations
Day-5	Mechanics Test (Final)

Test-7 FL.DY & Mechanics Combined Test

Final Touch

Days	Topics to be Covered
Day-1	LA, CAL & 3D
	One Day Gap
Day-2	ODE, VA and Statics & Dynamics
	One Day Gap
Day-3	MA, RA and CA & LPP
	One Day Gap
Day-4	PDE, NA, MECH. & FL.DY
	Two Days Gap
Day-5	LA, CAL, 3D, ODE, VA and Statics & Dynamics
	Two Days Gap
Day-6	MA, RA, CA, LPP, PDE, NA and MECH. & FL.DY