

**SEM MOZHI-PGTRB MATHS-GROUP-1
TEST SCHEDULE**

S.NO	DATE	SUBJECT	TEST TOPICS	NO.OF QUESTIONS
1	19-Apr-2025	ALGEBRA	Groups - Examples - Cyclic Groups - Permutation Groups - Lagrange's theorem - Normal subgroups - Homomorphism - Cayley's theorem - Cauchy's theorem - Sylow's theorems - Finite Abelian Groups. Rings - Integral Domain - Field - Ring Homomorphism - Ideals and Quotient Rings - Field of Quotients of Integral domains - Euclidean Rings - Polynomial Rings - Unique factorization domain. Fields - Extension fields - Elements of Galois theory - Finite fields.	100
2	26-Apr-2025	ALGEBRA	Vector Spaces - Linear independence of Bases - Dual spaces - Inner product spaces - Linear transformations - Rank - Characteristic roots - Matrices - Canonical forms - Diagonal forms - Triangular forms - Nilpotent transformations - Jordan form - Quadratic forms and Classification - Hermitian, Unitary and Normal transformations.	100
3	03-May-2025	ALGEBRA	ALGEBRA-FULL TEST	100
4	10-May-2025	REAL ANALYSIS	Elementary set theory - Finite, countable and uncountable sets - Real number system as a complete ordered field - Archimedean Property - Supremum, infimum, Sequences and Series - Convergence - limit supremum - limit infimum - The Bolzano - Weierstrass theorem - The Heine - Borel Covering theorem - Continuity, Uniform Continuity, Differentiability - The Mean Value theorem for derivatives Sequences and Series of functions - Uniform convergence.	100
5	17-May-2025	REAL ANALYSIS	Riemann Stieltjes integral: Definition and existence of the integral properties of the integral - Integral and Differentiation - Integration of vector valued functions - Sequences and Series of functions: Uniform convergence - Continuity, Integration and Differentiation. Power series - Fourier series. Functions of several variables - Directional derivative - Partial derivative - derivative as a linear transformation - The Inverse function theorem and The Implicit function theorem.	100
6	24-May-2025	REAL ANALYSIS	REAL ANALYSIS-FULL TEST	100
7	31-May-2025	TOPOLOGY	TOPOLOGY-FULL TEST-1	100
8	07-Jun-2025	COMPLEX ANALYSIS	Introduction to the concept of analytic function: Limits and continuity - Analytic functions - Polynomials and rational functions - Elementary theory of power series - Maclaurin's series - Uniform convergence - Power series and Abel's limit theorem - Analytic functions as mapping - Conformality arcs and Closed curves - Analytical functions in regions - Conformal mapping - Linear transformations - the linear group, the cross ratio and symmetry.	100
9	14-Jun-2025	COMPLEX ANALYSIS	Complex integration - Fundamental theorems - line integrals - rectifiable arcs line integrals as functions of arcs - Cauchy's theorem for a rectangle - Cauchy's theorem in a Circular disc - Cauchy's integral formula: The index of a point with respect to a closed curve - The integral formula - Higher derivatives - Local properties of Analytic functions and removable singularities - Taylor's theorem - Zeros and Poles - The local mapping - The maximum modulus Principle.	100
10	21-Jun-2025	COMPLEX ANALYSIS	COMPLEX ANALYSIS-FULL TEST	100
11	28-Jun-2025	FUNCTIONAL ANALYSIS	FUNCTIONAL ANALYSIS-FULL TEST	100
12	05-Jul-2025	DIFFERENTIAL GEOMETRY	DIFFERENTIAL GEOMETRY-FULL TEST	100
13	12-Jul-2025	DIFFERENTIAL EQUATIONS	Ordinary Differential Equations Linear differential equation with constant and variable co-efficients - Linear dependence and independence - Wronskian - Non homogeneous equations of order two and n - Initial value problems for nth order equations - Second order equations with ordinary point and regular singular points - Legendre Equations - Bessel's equation - Hermite's equation and their properties - Existence and Uniqueness of solutions to first order equations - Exact equation - Lipschitz condition - Non local existence of Solution - Approximation to Uniqueness of solutions.	100

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14	19-Jun-2025	DIFFERENTIAL EQUATIONS	Partial Differential Equations Lagrange and Charpit methods for solving first order Partial Differential equations - Classification of Second order partial differential equations - General solution of higher order partial differential equation with constant co-efficients - Method of separation of variables for Laplace, Heat and Wave equations (upto two dimensions only).	100	
15	26-Jul-2025	DIFFERENTIAL EQUATIONS	DIFFERENTIAL EQUATIONS-FULL TEST	100	
16	02-Aug-2025	CLASSICAL MECHANICS AND NUMERICAL ANALYSIS	Classical Mechanics: Generalised Co-ordinates - Lagrange's equations - Hamilton's Canonical equations - Hamilton's principle - Principle of least action - Canonical transformations - Differential forms and Generating functions - Lagrange and Poisson brackets.	100	
17	09-Aug-2025	CLASSICAL MECHANICS AND NUMERICAL ANALYSIS	Numerical Analysis: Numerical solutions of algebraic and transcendental equations - Method of iteration - Newton Raphson method - Rate of convergence - Solution of Linear algebraic equations using Gauss elimination and Gauss - Seidel methods. Finite differences - Lagrange, Hermite and Spline Interpolation, Numerical differentiation and integration - Numerical solutions of Ordinary differential equations using Picard, Euler, Modified Euler and Runge- Kutta methods.	100	
18	16-Aug-2025	CLASSICAL MECHANICS AND NUMERICAL ANALYSIS	CLASSICAL MECHANICS AND NUMERICAL ANALYSIS-FULL TEST	100	
19	23-Aug-2025	OPERATIONS RESEARCH	Linear programming problem - Simplex Methods - Duality - Dual Simplex Method - Revised Simplex Method - Integer Programming Problem - Dynamic Programming - Non linear programming - Network Analysis - Directed Network - Max Flow Min Cut theorem.	100	
20	30-Aug-2025	OPERATIONS RESEARCH	Queuing theory - Steady State solutions of M/M/1, M/M/1 with limited waiting space, M/M/C, M/M/C with limited waiting space, M/G/1 models - Inventory models - Deterministic models with and without shortages - Single Price break models.	100	
21	06-Sep-2025	OPERATIONS RESEARCH	OPERATIONS RESEARCH-FULL TEST-1	100	
22	13-Sep-2025	PROBABILITY THEORY	Sample space - Discrete Probability - Independent events - Baye's theorem - Random variables and Distribution functions (Univariate and Multivariate) - Expectation and Moments - Moment Generating function - Characteristic functions and Cumulants - Independent Random variables - Marginal and conditional distributions-Probability inequalities (Tchebyshev, Markov, Jensen) - Modes of convergence, Weak and Strong laws of large numbers - Central limit theorem (i.i.d case).	100	
23	20-Sep-2025	PROBABILITY THEORY	Probability distributions - Binomial, Poisson, Uniform, Normal, Exponential, Gamma, Beta, Cauchy distributions - Standard Errors - Sampling distributions of t, F and Chi square and their uses in tests of significance - ANOVA - Large sample tests for mean and proportions.	100	
24	27-Sep-2025	PROBABILITY THEORY	PROBABILITY THEORY-FULL TEST-1	100	
25	04-Oct-2025	REVISION TEST -1 (UNIT 1 TO 5)			100
26	11-Oct-2025	REVISION TEST -1 (UNIT 6 TO 10)			100
27	18-Oct-2025	MODEL TEST-1			100
28	25-Oct-2025	MODEL TEST-2			100