	7. The Constitutional Developments (1773 - 1947): The Regulating Act, Pitt's India Act and the Charter Acts. The Acts of 1861 and 1892 - the Morley Minto Reforms (1909) - the Montague-Chelmsford Reforms (1919) - Government of India Act (1935) - Working of Provincial Ministries - Cripps Mission, Wavell Plan and Cabinet Mission - Act of Indian Independence (1947). **8. Consolidation as a Nation after 1947:** Framing of the Indian Constitution - Integration of Princely States - the question of National Language - the linguistic reorganisation of States, making of India's foreign policy - Non-alignment and the Third World - India and her neighbours. **UNIT B** **01. Enlightenment and Modern Ideas:** (i) Major ideas of enlightenment ; and its impact (ii) French Revolution and its aftermath: 1789 - 1815 (iii) The American War of Independence (1776). The American civil War **02. Industrialization:** (i) Industrial Revolution in England: causes, nature, impact. (ii) Industrialization in other countries: USA, Germany, Russia, Japan. **03. Nationalism:** (i) Rise of nation states in Europe: Italy & Germany. **04. Imperialism, Colonialism and War:** (i) Capitalism, imperialism, scramble for colonies. (ii) Origins and impact of the First World War (iii) Making of the Russian Revolution & establishment of a Socialist State. **05. World history from 1919 to 1945:** (i) League of Nations, collective security. (ii) Rise of Nazism and Fascism : Germany, Italy & Japan. (iii) Second World War: Causes and consequences. **06. Asia and Africa after World War II:** (i) Chinese Revolution of 1949 (ii) Nationalist movements and decolonization in South and South East Asia. (iii) Changes in Africa: Egypt and South Africa, End of Apartheid. **07. Cold War & Global scenario:** (i) Origins and Growth of cold War (ii) UNO and global disputes - Korea, Congo, Cuban crisis. (iii) Emergence of Third World and NAM **08. Collapse of Soviet Union** (i) Disintegration of the Soviet Union: Causes & Consequences (ii) End of the Cold War (iii) Political Changes in Eastern Europe.
LAW :	
Paper – I :	Constitutional Law of India :International Law : Jurisprudence.
Paper – II :	Law of Crimes and Torts : Law of Contracts and Mercantile Law : Indian Evidence Act.
MATHEMATICS :	
Paper – I :	**Paper-I** **(1) Linear Algebra:** Vector spaces over R and C, linear dependence and independence, subspaces, bases, dimension; existence of basis for finite dimensional vector spaces; deletion and replacement theorem. Linear transformations, rank and nullity, matrix of a linear transformation. 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. Euclidean space, Gram-Schmidt orthogonalization. Symmetric, skew-symmetric, Hermitian, skew-Hermitian, orthogonal and unitary matrices and their eigenvalues. Quadratic forms, diagonalization of symmetric matrices.

	(2) Real Analysis I: 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. Open sets, limit points, closed sets. Bolzano-Weierstrass theorem. Functions of a real variable, limits, continuity. Intermediate value theorem. Differentiability, Rolle's theorem, mean-value theorem. Higher order differentiation, Leibnitz' formula, Taylor's theorem with remainders. L'Hospital's rule. Maxima and minima; asymptotes; envelopes. **(3) Real Analysis II:** Compact sets. Nested interval theorem. Heine Borel theorem. Uniform continuity of functions, properties of continuous functions on compact sets. Riemann Integration. Riemann's definition of definite integrals; Darboux theorem; Indefinite integrals; Fundamental theorems of integral calculus. Improper integrals. Sequences and series of functions. Uniform convergence. Term by term differentiation and integration. Power series. Cauchy-Hadamard test. Weierstrass approximation theorem (statement only). Fourier series. **(4) Analytic Geometry:** Cartesian and polar coordinates in two and three dimensions. Transformation of rectangular axes. Straight lines. Conic sections: Circle, parabola, ellipse, hyperbola and pair of straight lines. Second degree equations in two variables, reduction to canonical forms and classification of conics. Tangents and normals to conic sections. Planes in three dimension; shortest distance between two skew lines. Second degree equations in three variables, reduction to canonical forms. Sphere, cone, cylinder, paraboloid, ellipsoid, hyperboloid of one and two-sheets: tangent planes and normals. Surfaces of revolution. **(5) Differential Equations:** 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. Second and higher order linear equations with constant coefficients, complementary function, particular integral and general solution. Second order linear equations with variable coefficients, Euler-Cauchy equation; Determination of complete solution when one solution is known using method of variation of parameters. 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. Formation of partial differential equations. Solutions of 1^{st} order PDE, Lagrange's method and Charpit's method. **(6) Statics:** Equilibrium of a system of coplanar forces, Astatic equillibrium; Stability of equilibrium, equilibrium of forces in three dimensions. Work and potential energy, friction; Principle of virtual work. **(7) Particle Dynamics:** Rectilinear motion, simple harmonic motion. Damped harmonic oscillation. Motion of a particle in a plane. Work and energy, conservation of energy. Orbits under central forces. Planetary motion and Kepler's laws. Artificial satellite.
Paper – II :	**(1) Classical Algebra** Prime integers. Existence of infinitely many primes. Relatively prime integers. Congruence. Chinese remainder theorem. Fermat's theorem. Complex numbers; de Moivre's theorem; complex functions. Polynomial with real coefficients. Fundamental theorem of algebra. Relation between roots and coefficients. Symmetric functions of roots. Descartes' rule of sign. Cardan's method of solving a cubic equation. Ferrari's method of solving a biquadratic equation. Binomial equations and special roots. Inequalities AM ≥ GM ≥ HM and their generalizations. Cauchy Schwarz inequality. **(2) Abstract Algebra** Sets and relations; equivalence relations. Groups, subgroups, cyclic groups, cosets, Lagrange's Theorem, normal subgroups, quotient groups, homomorphism of groups, basic isomorphism theorems, permutation groups, Cayley's theorem. Rings, subrings and ideals, homomorphisms of rings; Integral domains, principal ideal domains, Euclidean domains and unique factorization domains; Polynomial Rings. Fields, quotient fields. Finite fields Z_p, for prime p. **(3) Multivariate Calculus & Vector Analysis** Vector valued functions of one real variable. Continuity and differentiability. Velocity and acceleration. Functions of two or three variables: limits, continuity. Directional derivative, partial derivatives, Jacobian.

	Chain rule. Higher order partial derivatives. Euler's theorem. Maxima and minima, Lagrange's method of multipliers. Double and triple integrals; Areas and volumes. Scalar and vector fields. Differentiation of vector fields. Gradient, divergence and curl. Higher order derivatives; Vector identities and vector equations. Line integral, Surface integral. Green's theorem and Stokes' theorem. **(4) Metric Space & Complex Analysis:** Metric spaces. Open sets and closed sets. Cauchy sequence and convergence. Completeness. Total boundedness. Compactness. Continuity, uniform continuity. Connectedness. Separable metric spaces. Baire category theorem. Examples: R^n, C^n, Space of real valued continuous functions on [a,b]. ℓp spaces. Extended complex plane, stereographic projection. Differentiability of complex functions; Cauchy-Riemann equations, Analytic functions, harmonic functions; relation between analytic and harmonic functions. **(5) Numerical Analysis and Computer programming:** Numerical Analysis: Interpolation. Newton's (forward and backward) interpolation, Lagrange's interpolation. Solution of algebraic and transcendental equations of one variable by bisection, fixed point iteration; Regula-Falsi and Newton-Raphson methods; solution of system of linear equations by Gaussian elimination and Gauss-Seidel (iterative) methods. Numerical integration: Trapezoidal rule, Simpson's 1/3rd rule, Gaussian quadrature formula. Numerical solution of ordinary differential equations: Picard, Euler and Runge- Kutta method (4-th order). Computer Programming: Positional number system, Binary, Octal, Decimal and Hexadecimal systems; Binary arithmetic, Conversion to and from decimal systems. Algorithms and flow charts: important features, Ideas about complexities of algorithm, applications in simple problems. Boolean algebra: Huntington postulates for Boolean algebra, algebra of sets and switching algebra as examples of Boolean algebra, duality principle, disjunctive normal and conjuctive normal forms of Boolean expressions. Design of simple switching circuit. Programming using C. **(6) Probability & Statistics:** Probability: Classical and frequency definitions of probability. Axioms of Probability. Multiplication rule of probabilities. Conditional probability, Bayes' theorem. Independent events. Bernouli trials and binomial law. Probability distribution. Distribution function (Discrete and continuous) of one variable: Binomial, Poisson, Gamma, Uniform and Normal. Transformation of random variables. Two dimensional probability distributions (Discrete and continuous): Uniform and normal. Transformation of random variables. Marginal and Conditional distributions. Mathematical expectation: Mean, variance, moments, central moments. skewness and kurtosis. Median, mode, quartiles. Moment-generating function. Characteristic function. Covariance, Correlation coefficient. Conditional expectation. Regression curves, least square regression lines and parabolas. Chi-square and t-distributions and their important properties. Tchebycheff's inequality. Convergence in probability. Statements of: Bernoulli's limit theorem. Law of large numbers. Statement of central limit theorem. Statistics: Sample characteristic and their computation. Sampling distributions of the sample mean and variance. Estimation of parameters: Method of maximum likelihood. Interval estimation for parameters of normal population. Bivariate samples. Sample correlation co-efficient. Least square regression lines and parabolas. Statistical hypothesis. Simple and composite hypothesis. Best critical region of a test. Neyman-Pearson theorem and its application to normal population. Likelihood ratio testing and its application to normal population. **(7) Linear Programming:** Linear programming problems, Graphical method of solutions; hyperspace, convex sets, extreme points. Basic solution, basic feasible solution and optimal solution; Fundamental theorem of LPP; Simplex method; Duality. Transportation and assignment problems.
MANAGEMENT :	
Paper – I :	**UNIT I** EVOLUTION AND GROWTH OF MANAGEMENT THOUGHT Concepts, Theory and Practice, The Evolution of Management Thought -- Scientific Management School, The Operational or Management Process approach, Behavioural School, Contemporary School, Recent Contributions, Patterns of Management Analysis, Managerial Roles approach **UNIT II** PLANNING AND ORGANISING Planning –Nature, Importance, Types, Process, Concept of MBO, Objectives, Policies, Procedures, Strategies Decision-Making-Approaches, Decision-Making under Certainty, Risk and Uncertainty, Group Decision Making Guidelines