CLASS:B.Sc./B.A.-III Year V Sem
NAME OF PAPER – GROUPS AND RINGS
PAPER CODE (for B.Sc.) - CML-506(i)
PAPER CODE (for B. A.) – BAMH-301(i)

SR. NO.	MONTHS	PERIOD	TOPICS
1.	1st	1st week 2nd week 3rd week Last week	1. Definition of a group.Example of abelian and non-abelian groups. The group $Z_n$of integers under addition modulo n and the group of (n) of units under multiplication modulo n. 2. Generator of a group. Cyclic groups. 3. Permutations groups. Alternating groups, Cayley's theorem. Subgroups and Subgroup criteria. 4. Cosets, Left and right cosets, properties of cosets.
2.	2nd	1st week 2nd week 3rd week Last week	1. Index of a sub-group. Coset decomposition 2. Lagrange's theorem on groups and its consequences, Normal subgroups, Quotient groups 3. Homomorphisms, isomorphisms, automorphisms on group. 4. Center of a group and class equation of a group and derived group of a group.
3.	3rd	1st week 2nd week 3rd week Last week	1. Introduction to Rings, Subrings, Integral domains and Fields 2. Characteristics of a ring. Ring homomorphisms, Theorems on Ring homomorphisms. 3. Ideals (Principle, Prime and Maximal) and Quotient rings, 4. Field of quotients of an integral domain..
4.	4th	1st week 2nd week 3rd week Last week	1. Euclidean rings, Polynomial rings, Polynomials over the rational field 2. The Eisenstein's criterion of irreducibility of polynomials over the field of rational numbers 3. Polynomial rings over commutative rings. Principal ideal domain, 4. Unique factorization domain.

CLASS:B.Sc./B.A.-II Year IIISem

NAME OF PAPER – Differential Equations

PAPER CODE -C24MAT301T

SR. NO.	MONTHS	PERIOD	TOPICS
1.	1st	1st week 2nd week 3rd week Last week	1. Geometrical meaning of a differential equation. Exact differential equations, integrating factors. 2. First order higher degree equations solvable for x,y,p Lagrange's equations, Clairaut's equations. Equations reducible to Clairaut's form. 3. Singular solutions. Linear differential equations with constant coefficients. 4. Homogeneous linear ordinary differential equations.Equations reducible to homogeneous.
2.	2nd	1st week 2nd week 3rd week Last week	1. Ordinary simultaneous differential equations. Solution of simultaneous differential equations. 2. Partial differential equations: Formation, order and degree 3. Linear and Non-Linear Partial differential equations of the first order: Complete solution, singular solution, General solution, 4. Solution of Lagrange's linear equations, Charpit's general method of solution. Linear partial differential equations of second and higher orders
3.	3rd	1st week 2nd week 3rd week Last week	1. Linear and non-linear homogeneous and non homogeneous equations with constant coefficients, 2. Partial differential equations with variable coefficients reducible to equations with constant coefficients, 3. Their complimentary functions and particular integrals. 4. Classification of linear partial differential equations of second order, hyperbolic, parabolic and elliptic types,
4.	4th	1st week 2nd week 3rd week Last week	1. Reduction of second order linear partial differential equations to Canonical (Normal) forms and their solutions. 2. Cauchy's problem for second order partial differential equations, 3. Characteristic equations and characteristic curves of second order partial differential equations. 4. Revision

CLASS:B.Sc./B.A.-II Year III Sem

NAME OF PAPER – SEC-Special functions and transform techniques(Theory)

PAPER CODE - C24SEC329T (i)

SR. NO.	MONTHS	PERIOD	TOPICS
1.	1st	1st week 2nd week 3rd week Last week	1. Series solution of differential equations – Power Series Method. 2. Series solution of differential equations – Power Series Method. 3. Bessel differentials equations and their solutions 4. Bessel differentials equations and their solutions
2.	2nd	1st week 2nd week 3rd week Last week	1. Legendre differentials equations and their solutions 2. Hermitedifferentials equations and their solutions. 3. Laplace Transforms 4. Laplace Transforms
3.	3rd	1st week 2nd week 3rd week Last week	1. First Shifting Theorem, 2. Change of Scale property, 3. Inverse Laplace Transform, 4. Inverse Laplace Transform,
4.	4th	1st week 2nd week 3rd week Last week	1. Multiplication by t^n, convolution Theorem 2. Application to Differential equation. 3. Application to Differential equation. 4. Revision

CLASS:B.Sc./B.A.-II Year III Sem

NAME OF PAPER – Special Functions and Transform Techniques LabPAPER CODE - C24SEC329P (i)

SR. NO.	MONTHS	PERIOD	TOPICS
1.	1st	1st week 2nd week 3rd week Last week	1. Basics of Python 2. Basics of Python 3. Basics of Python 4. Basics of Python
2.	2nd	1st week 2nd week 3rd week Last week	1. Practical problems for plotting of the Bessel's functions of first kind of order 0 to 3. 2. Practical problems for plotting of the Bessel's functions of first kind of order 0 to 3. 3. Practical problems to find zeros of Bessel's function of first and second kind. 4. Practical problems to find zeros of Bessel's function of first and second kind.
3.	3rd	1st week 2nd week 3rd week Last week	1. Practical problems to find zeros of first derivative of Bessel function of first kind and Legendre's polynomial. 2. Practical problems to find zeros of first derivative of Bessel function of first kind and Legendre's polynomial. 3. Practical problems for plotting of Legendre polynomial for n=1 to 5 in the interval [0,1] and verifying graphically that all roots of Legendre polynomial lie in the interval [0,1]. 4. Practical problems for plotting of Legendre polynomial for n=1 to 5 in the interval [0,1] and verifying graphically that all roots of Legendre polynomial lie in the interval [0,1].
4.	4th	1st week 2nd week 3rd week Last week	1. Practical problems related to coefficients of Legendre polynomial. 2. Practical problems based on plotting of Hermite's polynomial. 3. Practical problems related to Laplace Transforms 4. Revision

CLASS:B.A.-II Year III Sem

NAME OF PAPER – Applications of Mathematical Statistics in daily life

PAPER CODE - C24MDC319T

SR. NO.	MONTHS	PERIOD	TOPICS
1.	1st	1st week 2nd week 3rd week Last week	1. **Introduction to Statistics:**-Definition and Importance, 2. Applications of Statistics in Real Life (e.g., business, health, sports, education) 3. **Types of Data**: Qualitative vs. Quantitative Data, Discrete vs. continuous Data, 4. Primary and Secondary Data,
2.	2nd	1st week 2nd week 3rd week Last week	1. **Organizing Data:** Frequency Distribution Tables, 2. Grouped and ungrouped Data. 3. **Measures of Central Tendency:-Mean** (Arithmetic Average): Calculation for Ungrouped 4. **Mean** (Arithmetic Average)Calculation forGrouped Data
3.	3rd	1st week 2nd week 3rd week Last week	1. **Median:** Finding the Middle Value for Ungrouped Data, 2. **Median:** Finding the Middle Value for Grouped Data, 3. **Mode**: Identifying the Most Frequent Value 4. **Measures of Dispersion:- Range** -Definition and Calculation
4.	4th	1st week 2nd week 3rd week Last week	1. Variance - Concept and Basic Calculation for Ungrouped Data, 2. Standard Deviation- Concept and Basic Calculation for Ungrouped Data 3. **Interquartile Range (IQR)**- Understanding Quartiles and Spread of Data 4. Revision

CLASS:B.Sc./B.A.-I Year ISem

NAME OF PAPER – Basic Algebra and Number Theory

PAPER CODE - C24MAT101T

SR. NO.	MONTHS	PERIOD	TOPICS
1.	1st	1st week 2nd week 3rd week Last week	1. Symmetric, Skew- symmetric, Hermitian and Skew-Hermitian matrices, 2. Elementary operations on matrices, rank of a matrix. Row rank and column rank of a matrix. 3. Eigen values, eigenvectors and the characteristic equation of a matrix. 4. Minimal polynomial of a matrix. Cayley Hamilton theorem and its use in finding the inverse of a matrix.
2.	2nd	1st week 2nd week 3rd week Last week	1. Applications of matrices to a system of linear (both homogeneous and non–homogeneous) equations. 2. Theorems on consistency of a system of linear equations. 3. Unitary and Orthogonal Matrices. 4. Relations between the roots and coefficients of general polynomial equation in one variable.
3.	3rd	1st week 2nd week 3rd week Last week	1. Solutions of polynomial equations having conditions on roots. 2. Common roots and multiple roots. Nature of the roots of an equations, 3. Solutions of cubic equations (Cardon's method). 4. Biquadratic equations and their solutions (Ferrari's Method).
4.	4th	1st week 2nd week 3rd week Last week	1. Divisibility, G.C.D. (greatest common divisors), L.C.M. (least common multiple), problems based on prime numbers 2. Fundamental Theorem of Arithmetic. Linear Congruence, 3. Euler's Theorem, Fermat's theorem. Wilson's theorem and its converse. 4. Chinese Remainder Theorem.

CLASS:B.Sc./B.A.-I Year ISem

NAME OF PAPER – Vector Calculus and Solid Geometry Lab

PAPER CODE - C24SEC129P

SR. NO.	MONTHS	PERIOD	TOPICS
1.	1st	1st week 2nd week 3rd week Last week	1. Basics of Python 2. Basics of Python 3. Basics of Python 4. Basics of Python
2.	2nd	1st week 2nd week 3rd week Last week	1. Area of Parallelograms using scalar product. 2. Area of Parallelograms using scalar product. 3. Work done by a force using scalar product. 4. To plot 2-D and 3-D vector field.
3.	3rd	1st week 2nd week 3rd week Last week	1. Find the volume of a parallelepiped using triple product of vectors. 2. Find the gradient of scalar function and its plotting. 3. Find the divergence of vector function and its plotting. 4. Find the curl of vector function and its plotting.
4.	4th	1st week 2nd week 3rd week Last week	1. Tracing of a sphere of given equation. 2. Tracing of right circular cylinder of given equation. 3. Find the center and radius of sphere. 4. Find the radius of right circular cylinder

CLASS:B.Com I Year ISem
NAME OF PAPER – Business Mathematics
PAPER CODE - C24SMIC103T

SR. NO.	MONTHS	PERIOD	TOPICS
1.	1st	1st week 2nd week 3rd week Last week	1. Logarithms: Definition,Laws, 2. Common Algorithms, 3. Parts of Common Algorithms-Characteristics, Mantissa; 4. Anti-logarithms:Methods of finding anti-logarithm.
2.	2nd	1st week 2nd week 3rd week Last week	1. Annuity, 2. Annuity, 3. Compound Interest 4. Arithmetical Progression- General term,
3.	3rd	1st week 2nd week 3rd week Last week	1. Arithmetical Progression- Sum of finite numbers, Arithmetic Mean 2. Geometrical Progression- nth term of G.P., 3. Geometrical Progression:Sum of first terms, Sum to infinity, Geometric mean. 4. Matrices: Definition of matrices: Types of matrices;
4.	4th	1st week 2nd week 3rd week Last week	1. Algebra of matrices; 2. Algebra of matrices; 3. Determinants: 4. Properties of determinants.