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

NAME OF PAPER – PARTIAL DIFFERENTIAL EQUATION AND LAPLACE TRANSFORMATION

PAPER CODE(for B.Sc) -CML-406

PAPER CODE(for B.A.) - BAMH-204

SR. NO.	MONTHS	PERIOD	TOPICS
1.	1st	1st week 2nd week 3rd week Last week	1. Partial differential equations: Formation, order and degree. 2. Linear and non-linear partial differential equations of the first order: Complete solution. 3. Singular solution, General solution, Solution of Lagrange's linear equations. 4. Charpit's general method of solution, Compatible systems of first order equations, Jacobi's method.
2.	2nd	1st week 2nd week 3rd week Last week	1. Linear partial differential equations of second and higher orders. Linear and non-linear homogeneous equations with constant coefficients. 2. Partial differential equation with variable coefficients reducible to equations with constant coefficients. 3. Equations reducible to linear equations with constant coefficient.Classification of linear partial differential equations of second order, Hyperbolic. Parabolic and elliptic types. 4. Reduction of second order linear partial differential equations to Canonical(Normal) forms and their solutions.
3.	3rd	1st week 3rd week Last week	1. Solution of linear hyperbolic equations, Monge's method.Cauchy's problem. Characteristic equations and characteristic curves of second order partial differential equation. 2. Method of separation of variables : Solution of Laplace's equation. 3. Series solution of differential equations – Power series method.
4.	4th	1st week 2nd week 3rd week Last week	1. Bessel equation and its solution: Bessel functions. 2. Legendre differentials equations and and their solutions: Legendre functions. REVISION REVISION

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A-P Math

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

NAME OF PAPER – MECHANICS-I

PAPER CODE(for B.Sc) -CML-407

PAPER CODE(for B.A.) - BAMH-205

SR. NO	MONTHS	PERIOD	TOPICS
1.	1st	1st week 2nd week 3rd week Last week	1. Forces acting at a point. 2. Parallel Forces 3. Moments. 4. Couples.
2.	2nd	1st week 2nd week 3rd week Last week	1. Forces in three dimensions.Poinsots central axis. Wrenches . 2 Null lines and Planes. 3. Motion along a Plane curve. Vector angular velocity. 4. Relative Motion.
3.	3rd	1st week 3rd week Last week	1. Simple harmonic motion. 2. Newton's laws of motion. 3. Central Orbits
4.	4th	1st week 2nd week 3rd week Last week	1. Kepler laws of motion 2. Revision 3. Revision 4. Revision

CLASS: B.Sc./ B.A. III Year VI Sem

NAME OF PAPER - LINEAR ALGEBRA

PAPER CODE (for B.Sc.) – CML-605

PAPER CODE (for B.A.) –BAMH-304

SR. NO.	MONTHS	PERIOD	TOPICS
1.	1st	1st week 2nd week 3rd week Last week	1. Vector spaces, subspaces, 2.Sum and Direct sum of subspaces, 3. Linear span, Linearly Independent and dependent subsets of a vector space. 4. Finitely generated vector space, Existence theorem for basis of a finitely generated vactor space,
2.	2nd	1st week 2nd week 3rd week Last week	1. Finite dimensional vector spaces, Invariance of the number of elements of bases sets, Dimensions, 2. Quotient space and its dimension Homomorphism and isomorphism of vector spaces, 3. Linear transformations and linear forms on vactor spaces, Vactor space of all the linear transformations 4. Dual Spaces, Bidual spaces, annihilator of subspaces of finite dimentional vactor spaces
3.	3rd	1st week 2nd week 3rd week Last week	1. Null Space, Range space of a linear transformation, Rank and Nullity Theorem, 2. Algebra of Liner Transformation 3. Minimal Polynomial of a linear transformation, Singular and non-singular linear transformations, 4. Matrix of a linear Transformation, Change of basis.
4.	4th	1st week 2nd week 3rd week Last week	1.Eigen values and Eigen vectors of linear transformations 2. Inner product spaces, Cauchy-Schwarz inequality, Orthogonal vectors, Orthogonal complements, Orthogonal sets and Basis, 3. Bessel's inequality for finite dimensional vector spaces, Gram-Schmidt, Orthogonalization process, 4. Adjoint of a linear transformation and its properties, Unitary linear transformations.

Narendra Jan

A-1. Math

CLASS: B.Sc./B.A. - III Year VI Sem
NAME OF PAPER – REAL AND COMPLEX ANALYSIS
PAPER CODE(for B.Sc) -CML-607
PAPER CODE(for B.A.) - BAMH-306

SR. NO.	MONTHS	PERIOD	TOPICS
1.	1st	1st week 2nd week 3rd week Last week	1 Definition and examples of metric spaces, neighborhoods, 2. Limit points, interior points, open and closed sets, closure and interior, boundary points, 3.Subspace of a metric space, equivalent metrics, 4.Cauchy sequences, completeness, Cantor's intersection theorem.
2.	2nd	1st week 2nd week 3rd week Last week	1. Baire's category theorem, Contraction Principle, 2. Continuous functions, uniform continuity, compactness for metric spaces, sequential compactness, 3. Bolzano-Weierstrass Property, total boundedness, finite intersection property, 4. Continuity in relation with compactness, connectedness.
3.	3rd	1st week 2nd week 3rd week Last week	1 Improper integrals and their convergence, comparison tests, 2.Abel's and Dirichlet's tests, Frullani's integral, 3.Integral as a function of a parameter. Continuity, 4. Differentiability and integrability of an integral of a function of a parameter
4.	4th	1st week 2nd week 3rd week Last week	1. Topology of complex numbers: Trigonometric, exponential, logarithmic and hyperbolic trigonometric functions. 2. Extended complex plane, Stereographic projection of complex numbers. 3. Continuity and differentiability of complex functions. Analytic functions, Cauchy-Riemann equations, harmonic conjugates, harmonic functions. 4. Construction of analytic functions: direct method and Milne-Thomson method

PAPER CODE(for B.Sc) -CML-606

PAPER CODE(for B.A.) - BAMH-305

SR. NO	MONTHS	PERIOD	TOPICS
1.	1st	1st week	1. Analytical conditions of equilibrium of co-planar forces: Equilibrium of three forces, conditions of equilibrium, trigonometric theoram .
		2nd week	2. conditions of equilibrium of co-planar forces (First, Second and Third form);.Friction: Definition of friction and basic laws,.
		3rd week	3. problems based on equilibrium of rods and ladders,
		Last week	4. Centre of gravity: Basic concepts
2.	2nd	1st week	1. centre of gravity of a uniform rod, a thin uniform lamina in the form of a parallelogram
		2nd week	2. a thin uniform triangular lamina, three uniform rods forming a triangles
		3rd week	3. a uniform quadrilateral lamina, lamina in the form of a trapezium,
		Last week	4. centre of gravity of a body by integration. Motion of a particle attached to an elastic string,
3.	3rd	1st week	1. Hooke's law, motion of horizontal and vertical elastic strings
		2nd week	2. Definition of work, Power and Energy, work done by a variable force, work done in stretching an elastic string, principle of work and energy
		3rd week	3. Definitions of Conservative forces and Impulsive forces. conservative system of forces, principle of conservation of energy, impulse of a constant force and a variable force
		Last week	4.. Motion on smooth and rough plane curves. Motion of a particle on smooth curves, motion on the outside and inside of a smooth vertical circle,
4.	4th	1st week	1. cycloidal motion, motion on a rough curve under gravity.
		2nd week	2. Projectile motion of a particle in a plane, velocity at any point of the trajectory, directions of projection for a particle, range and time of flight on an inclined plane,.
		3rd week	3. directions of projection for a given velocity and a given range; range and time of fight down an inclined plane.
		Last week	4. Revision

CLASS: B.Sc./ B.A. III Year VI Sem
NAME OF PAPER – SOLID GEOMETRY
PAPER CODE (for B.Sc.) – CML-608
PAPER CODE (for B.A.) –BAMH-307

SR. NO.	MONTHS	PERIOD	TOPICS
1.	1st	1st week 2nd week 3rd week Last week	1. Central Conicoids 2. Equation of tangent plane. 3. Director sphere.. 4. Normal to the conicoids
2.	2nd	1st week 2nd week 3rd week Last week	1 Polar plane of a point, 2. Enveloping cone of a coincoid 3. Enveloping cylinder of a coincoid 4. Enveloping cylinder of a coincoid
3.	3rd	1st week 2nd week 3rd week Last week	1. Paraboloids:, 2. Algebra of Liner Transformation 3. Minimal Polynomial of a linear transformation, Singular and non-singular linear transformations, 4. Matrix of a linear Transformation, Change of basis.
4.	4th	1st week 2nd week 3rd week Last week	1.Eigen values and Eigen vectors of linear transformations 2. Inner product spaces, Cauchy-Schwarz inequality, Orthogonal vectors, Orthogonal complements, Orthogonal sets and Basis, 3. Bessel's inequality for finite dimensional vector spaces, Gram-Schmidt, Orthogonalization process, 4. Adjoint of a linear transformation and its properties, Unitary linear transformations.

CLASS: B.Sc./ B.A. III Year VI Sem

SKILL ENHANCEMENT

NAME OF PAPER – SOLID GEOMETRY
PAPER CODE (for B.Sc.) – CML-608(i)
PAPER CODE (for B.A.) –BAMH-307(i)

SR. NO.	MONTHS	PERIOD	TOPICS
1.	1st	1st week & 2nd week	Central Conicoids: Equation of tangent plane.
		3rd week & Last week	Director sphere. Normal to the conicoids.
2.	2nd	1st week & 2nd week	Polar plane of a point. Enveloping cone of a coincoid.
		3rd week & Last week	Enveloping cylinder of a coincoid.
3.	3rd	1st week & 2nd week	Paraboloids: Circular section,
		3rd week & Last week	Plane sections of conicoids.
4.	4th	1st week & 2nd week	Generating lines. Confocal conicoid.
		3rd week & Last week	Reduction of second degree equations