

GOVERNMENT COLLEGE BIROHAR (JHAJJAR)

Summary of Lesson Plans of College Faculty for Academic Session 2025-26

Name of Assistant Professor: NISHA RANI

Class & Sem.: B.SCI (I Sem) Subject: Mathematics (functions & Algebra)

Months	Topics/Chapters to be covered
August 2025	Relations, functions along with domain & Range, Composition of functions, Invertibility & Inverse of a functions, one-to-one correspondence and the cardinality of a set.
September 2025	Relations between the roots & coefficients of general polynomial equation in one variable. Solutions of polynomial equations having condition on roots. Common roots & multiple roots. Transformation of equations. Nature of the roots of an equation Descartes's rule of signs, Solution of cubic equations (Cardan's Method). Biquadratic equations & their solutions
October 2025	Matrix & its types: Symmetric, skew-symmetric Hermitian & Skew-Hermitian matrices Unitary & orthogonal matrices, Idempotent Involuntary, Nilpotent matrices. Rank of a Matrix & its applications: Rank of a matrix, Row rank & column rank of a Matrix Elementary operation on Matrices, Inverse of a matrix Normal form, PAQ form. Linear dependence & independence of rows & column of matrices.
November 2025	Application of matrices to a system of linear (both Homogeneous & non-Homogeneous) equations, Theorem on consistency of a system of linear equations. Eigen values, Eigen vectors & the characteristic equation of a Matrix, Minimal polynomial of a Matrix, Cayley Hamilton theorem & its use in finding the inverse of a matrix. Diagonalization of a Matrix.

Signature of Assistant Professor

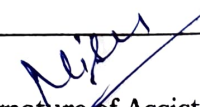
GOVERNMENT COLLEGE BIROHAR (JHAJJAR)

Summary of Lesson Plans of College Faculty for Academic Session 2025-26

Name of Assistant Professor: Nisha Rani

Class & Sem.: MDC (Sem III) Subject: Applicable Mathematics

Months	Topics/Chapters to be covered
August 2025	Theory of Sets: Meaning, elements, types, presentation & equality of sets. Union, Intersection, complement and difference of sets, Venn diagram, Cartesian product of two sets, Applications of set theory.
September 2025	Definition of a Matrix, Types of Matrices; Algebra of Matrices; Properties of determinants; Calculation of values of Determinants upto third order.
October 2025	Adjoint of a Matrix, elementary row & column operations; finding inverse matrix through adjoint, Solution of a system of linear equations having unique solution & involving not more than three variables.
November 2025	Compound interest & Annuities: Certain different types of interest rate; Concept of present value & amount of a sum, Types of annuities; present value & amount of an annuity, including the case of continuous compounding.


 Signature of Assistant Professor

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Name of Assistant Professor: NISHA RANI

Class & Sem.: B.Sc III (IV Sem) Subject: Real Analysis (Maths)

Months	Topics/Chapters to be covered
August 2025	Riemann Integral, Integrability of continuous & monotonic functions, The fundamental theorem of integral calculus, Mean value theorems of Integral Calculus.
September 2025	Improper Integral & their convergence, comparison tests, Abel's & Dirichlet's tests, Frullani's integral, Integral as a function of a parameter. Continuity, Differentiability and integrability of an integral of a function of a parameter.
October 2025	Definition and examples of metric spaces, neighbourhoods, limit points, interior points, open & closed sets, Closure & interior, boundary points, subspace of a metric space, equivalent metrics, Cauchy sequences, completeness, Cantor's Intersection theorem, Baire's category theorem, Contraction principle.
November 2025	Continuous function, Uniform continuity, compactness for metric spaces, Sequential compactness, Bolzano-Weierstrass property, total boundedness, finite intersection property, Continuity in relation with compactness, connectedness, components, continuity in relation with connectedness.

Nisha
Signature of Assistant Professor