

GOVERNMENT COLLEGE BAROTA GOHANA
(SONIPAT)

Summary of Lesson Plans of College Faculty for Academic Session 2024 - 2025

Name of Assistant/Associate Professor:- Ms. Nikita Goel

Class:- B.A./B.Sc. I (Theory)

From:- July 2024-Nov 2024

Subject:- Functions and Algebra(MATHS MAJOR)

Semester:- ODD Semester

Months	Week	Topics/ Chapters to be Covered
JULY	4th week	Relations, Functions along with domain and range, Composition of functions, Invertibility and inverse of functions.
AUGUST	1st week	One-to-one correspondence and the cardinality of a set.
	2nd week	Relations between the roots and coefficients of general polynomial equation in one variable.
	3rd week	Solutions of polynomial equations having conditions on roots.
	4th week	Test, Common roots and multiple roots, Transformation of equations.
SEPTEMBER	1st week	Transformation of equations ctd.
	2nd week	Assignment, Nature of the roots of an equation, Descarte's rule of signs, Cardon's method to solve cubic Equations.
	3rd week	Cardon's method ctd., Biquadratic equations and their solutions.
	4th week	Biquadratic equations and their solutions ctd., Test.
OCTOBER	1st week	Matrix and its types, Rank of a matrices, Row rank and column rank of a matrix, Elementary Operations on matrices, Inverse of a matrix, Assignment.
	2nd week	Normal Form, PAQ Form, Linear dependence and independence of rows and columns of matrices , Applications of matrices to a system of linear (both homogeneous and non- homogeneous) equations.
	3rd week	Theorems on consistency of a system of linear equations, Test
	4th week	Eigenvalues, eigenvectors and the characteristic equation of a matrix
NOVEMBER	1st week	Minimal polynomial of a matrix. Cayley Hamilton theorem and its use in finding the inverse of a matrix
	2nd week	Diagonalization of matrix, Test
	3rd week	Revision.



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Summary of Lesson Plans of College Faculty for Academic Session 2024 - 2025

Name of Assistant/Associate Professor:- Ms. Nikita Goel

Class:- B.A./B.Sc. III

From:- July 2024-Nov 2024

Subject:- Groups and Rings(Mathematics)

Semester:- ODD Semester

Months	Week	Topics/ Chapters to be Covered
JULY	4th week	Definition of a group with example and simple properties of groups.
AUGUST	1st week	Subgroups and Subgroup criteria, Generation of groups, cyclic groups.
	2nd week	Cosets, Left and right cosets, Index of a sub-group Coset decomposition, Lagrange's theorem and its consequences.
	3rd week	Normal subgroups, Quotient groups, Test.
	4th week	Homomorphisms, isomorphisms, automorphisms.
SEPTEMBER	1st week	Inner automorphisms of a group, Automorphisms of cyclic groups.
	2nd week	Center of a group and derived group of a group, Permutations groups.
	3rd week	Assignment, Test, Introduction to rings, subrings.
	4th week	Integral domains and fields, Characteristics of a ring.
OCTOBER	1st week	Ring homomorphisms.
	2nd week	Ring homomorphisms ctd., Ideals (principle, prime and Maximal).
	3rd week	Quotient rings, Field of quotients of an integral domain.
	4th week	Test, Euclidean rings.
NOVEMBER	1st week	Polynomial rings, Polynomials over the rational field, The Eisenstein's criterion, Assignment.
	2nd week	Polynomial rings over commutative rings, Unique factorization domain, R unique factorization domain implies so is $R[X_1, X_2, \dots, X_n]$
	3rd week	Test, Revision



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Summary of Lesson Plans of College Faculty for Academic Session 2024 - 2025

Name of Assistant/Associate Professor:- Ms. Nikita Goel

Class:- B.A./B.Sc. II

From:- July 2024-Nov 2024

Subject:- Advanced Calculus(Mathematics)

Semester:- ODD Semester

Months	Week	Topics/ Chapters to be Covered
JULY	4th week	Indeterminate forms.
AUGUST	1st week	Indeterminate forms ctd., Limit and continuity of real valued functions of two variables, Partial differentiation.
	2nd week	Test, Homogenous functions & Euler's theorem on homogeneous functions, Composite functions & implicit functions.
	3rd week	Change of variables, Taylor's theorem for functions of two variables, Differentiability of real valued functions of two variables.
	4th week	Test, Assignment, Schwarz Thm, Young's theorem. Implicit function theorem.
SEPTEMBER	1st week	Maxima, Minima and saddle points of two variables.
	2nd week	Maxima, Minima and saddle points of two variables ctd., Lagrange's method of multipliers.
	3rd week	Test, Continuity, Sequential Continuity, Properties of continuous functions, Uniform continuity.
	4th week	Mean value theorems, Rolle's Theorem, Lagrange's mean value theorem and their geometrical interpretations.
OCTOBER	1st week	Taylor's Theorem with various forms of remainders, Darboux intermediate value theorem for derivatives.
	2nd week	Assignment, Curves: Tangents, Principal normals, Binormals, Serret-Frenet formulae.
	3rd week	Locus of the centre of curvature, Spherical curvature, Locus of centre of Spherical curvature.
	4th week	Involutes, evolutes, Bertrand Curves.
NOVEMBER	1st week	Surfaces: Tangent planes, one parameter family of surfaces.
	2nd week	Envelopes, Test.
	3rd week	Revision.



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