

Government College, Chhachhrauli

Summary of Lesson Plan

Name of Teacher: Dr. Indu Bala Academic Session : 2023-2024

Class : B.Sc. I Semester :1st

Subject : Calculus, B23-MAT-101

Unit	Topic/Chapters to be covered	Duration	Assignment and Tests
1.	ϵ - δ definition of limit and continuity of a real valued function, Basic properties of limits, Types of discontinuities, Differentiability of functions, Application of L'Hospital rule to indeterminate forms	01 Aug to 15 Aug	-
2.	Successive differentiation, Leibnitz theorem	15 Aug to 31 Aug	Assignment
3.	Taylor's and Maclaurin's series expansion with different forms of remainder	01 Sept to 15 Sept	-
4.	Asymptotes: Horizontal, vertical and oblique asymptotes for algebraic curves, Asymptotes for polar curves	16 Sept to 30 Sept	Test 1
5.	Intersection of a curve and its asymptotes, Curvature and radius of curvature of curves (cartesian, parametric, polar & intrinsic forms), Newton's method	1 Oct to 15 Oct	-
6.	Centre of curvature and circle of curvature, Multiple points, Node, Cusp, Conjugate point, Tests for concavity and convexity	16 Oct to 31 Oct	Assignment
7.	Points of inflexion, Tracing of curves, Reduction formulae.	1 Nov to 15 Nov	Test 2
8.	Rectification, intrinsic equation of a curve, Quadrature	16 Nov to 30 Nov	-

9.	Area bounded by closed curves	1 Dec to 15 Dec	-
10.	Volumes and surfaces of solids of revolution	16 Dec to 31 Dec	

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Summary of Lesson Plan

Name of Teacher: Dr. Indu Bala

Academic Session : 2023-2024

Class : B.Sc. III Semester 5th

Subject : Real Analysis, BM 351

Unit	Topic/Chapters to be covered	Duration	Assignment and Tests
1.	Riemann integral, Integrability of continuous and monotonic functions	01 Aug to 15 Aug	-
2.	Fundamental theorem of integral calculus. Mean value theorems of integral calculus	15 Aug to 31 Aug	Assignment
3.	Definition of a group with example and simple properties of groups, Subgroups and Subgroup criteria	01 Sept to 15 Sept	-
4.	Generation of groups, cyclic groups, Cosets, Left and right cosets, Index of a sub-group Coset decomposition	16 Sept to 30 Sept	Test 1
5.	Lagrange's theorem and its consequences, Normal subgroups, Quotient groups, Improper integrals and their convergence, Comparison tests, Abel's and Dirichlet's tests, Frullani's integral	1 Oct to 15 Oct	-
6.	Integral as a function of a parameter. Continuity, Differentiability and integrability of an integral of a function of a parameter	16 Oct to 31 Oct	Assignment
7.	Definition and examples of metric spaces, neighborhoods, limit points, interior points,	1 Nov to 15 Nov	Test 2
8.	open and closed sets, closure and interior, boundary points, subspace of a metric space	16 Nov to 30 Nov	-

9.	Continuous functions, uniform continuity, compactness for metric spaces	1 Dec to 15 Dec	-
10.	Homomorphisms, isomorphisms, automorphisms and inner automorphisms of a group.	16 Dec to 31 Dec	

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Summary of Lesson Plan

Name of Teacher: Dr. Indu Bala

Academic Session : 2023-2024

Class : B.Sc. III Semester 5th Subject : Advanced Calculus, BM 231

Unit	Topic/Chapters to be covered	Duration	Assignment and Tests
1.	Continuity, Sequential Continuity, properties of continuous functions, Uniform continuity, chain rule of differentiability	01 Aug to 15 Aug	-
2.	Mean value theorems; Rolle's Theorem and Lagrange's mean value theorem and their geometrical interpretations. Taylor's Theorem with various forms of remainders, Darboux intermediate value theorem for derivatives, Indeterminate forms	15 Aug to 31 Aug	Assignment
3.	Limit and continuity of real valued functions of two variables. Partial differentiation	01 Sept to 15 Sept	-
4.	Total Differentials; Composite functions & implicit functions. Change of variables. Homogenous functions & Euler's theorem on homogeneous functions	16 Sept to 30 Sept	Test 1
5.	Taylor's theorem for functions of two variables. Differentiability of real valued functions of two variables	1 Oct to 15 Oct	-
6.	Schwarz and Young's theorem. Implicit function theorem. Maxima, Minima and saddle points of two variables. Lagrange's method of multipliers.	16 Oct to 31 Oct	Assignment
7.	Curves: Tangents, Principal normals, Binormals, Serret-Frenet formulae. Locus of the centre of curvature	1 Nov to 15 Nov	Test 2
8.	Spherical curvature, Locus of centre of Spherical curvature, Involutives, evolutes	16 Nov to 30 Nov	-

9.	Bertrand Curves. Surfaces: Tangent planes, one parameter family of surfaces, Envelopes.	1 Dec to 15 Dec	-
10.	Continuity, Sequential Continuity, properties of continuous functions, Uniform continuity, chain rule of differentiability	16 Dec to 31 Dec	