Government College, Chhachhrauli

Summary of Lesson Plan

Name of Teacher: Dr. Indu Bala **Academic Session :2025-26**

Class : B. Sc. I **Semester :IISubject :Algebra& Number Theory**

Unit	Topic/Chapters to be covered	Duration	Assignment and Tests
I	Symmetric, Skew symmetric, Hermitian and skew Hermitian matrices, Elementary operations on matrices	**14-01-26 20-01-26**	
I	Rank of a matrix,Inverse of a matrix, Linear dependence and independence ofrows and columns of matrix, Row rank and column rank of amatrix	**21-01-26 31-01-26**	
I	Eigen values, Eigen vectors and characteristic equation of a matrix, Minimal polynomial of a matrix Cayley-Hamiltontheorem and its use in finding the inverse of a matrix, Unitaryand orthogonal matrices.	**01-02-26 08-02-26**	
II	Relations between the roots and coefficients of general polynomial equation in one variable, Solutions of polynomial equations having conditions on roots Common roots and multiple roots, Transformation of equations	**09-02-26 15-02-26**	
II	Nature of the roots of an equation, Descarte's rule of signs.	**16-02-26 22-02-26**	**Test I**
II	Solutions of cubic equations (Cardon's method), Biquadratic equations and their solutions	**23-02-26 28-02-26**	**Assignment I**
	HOLI BREAK	**01-03-26 08-03-26**	

III	Divisibility, Greatest common divisor (gcd), Least common multiple	**09-03-26 15-03-26**	
III	Prime numbers, Fundamental theorem ofarithmetic.	**16-03-26 22-03-26**	
IV	Linear congruences, Fermat's theorem	**23-02-26 29-03-26**	
IV	Euler's theorem, Wilson's theorem and its converse	**30-03-26 05-04-26**	**Test II**
IV	Chinese Remainder theorem, Linear Diophantine equations in two variables	**06-04-26 12-04-26**	**Assignment II**
	Revision of Unit I	**13-04-26 19-04-26**	
	Revision of Unit II and III	**20-04-26 26-04-26**	
	Revision of Unit IV	**27-04-26 05-05-26**	

Government College, Chhachhrauli

Summary of Lesson Plan

Name of Teacher: Dr. Indu Bala **Academic Session :2025-26**

Class : B. Sc. II **Semester : IV** **Subject : Analytical Geometry and Vector Calculus**

Unit	Topic/Chapters to be covered	Duration	Assignment and Tests
I	General equation of second degree: Classification of conic sections; centre, asymptotes, axes, eccentricity, foci and directrices of conics	**14-01-26 20-01-26**	
I	Tangent at any point to a conic, chord of contact, pole of line to a conic, director circle of a conic.	**21-01-26 31-01-26**	
I	Polar equation of a conic, tangent and normal to a conic, confocal conics.	**01-02-26 08-02-26**	
II	Sphere: General form, Plane section of a sphere. Sphere through a given circle. Intersection of two spheres,	**09-02-26 15-02-26**	
II	Tangent plane and line, polar plane and line, orthogonal spheres, radical plane of two spheres and co-axal system of spheres.	**16-02-26 22-02-26**	**Test I**
II	Cone: Equation of a cone, right circular cone, quadric cone, enveloping cone. Tangent plane and condition of tangency.	**23-02-26 28-02-26**	**Assignment I**
	HOLI BREAK	**01-03-26 08-03-26**	

III	Cylinder: Right circular cylinder and enveloping cylinder.	**09-03-26** **15-03-26**	
III	Central Conicoids: Equation of tangent plane. Director sphere. Normal to the conicoids. Polar plane of a point. Enveloping cone of a conicoid	**16-03-26** **22-03-26**	
III	Enveloping cylinder of a conicoid, confocal conicoid, reduction of second degree equations.	**23-02-26** **29-03-26**	
IV	Scalar and Vector product of three vectors, four vectors, reciprocal vectors, vector differentiation and derivative along a curve, directional derivatives. Gradient of a scalar point function, divergence and curl of vector point functions, their geometrical meanings and vector identities	**30-03-26** **05-04-26**	**Test II**
IV	Vector integration: line integral, surface integral and volume integral. Theorem of Gauss, Green, Stoke and problems based on these	**06-04-26** **12-04-26**	**Assignment II**
	Revision of Unit I	**13-04-26** **19-04-26**	
	Revision of Unit II and III	**20-04-26** **26-04-26**	
	Revision of Unit IV	**27-04-26** **05-05-26**	

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Summary of Lesson Plan

Name of Teacher: Dr. Indu Bala **Academic Session :2025-26**

Class : B. Sc. III **Semester : VI** **Subject : Numerical Analysis**

Unit	Topic/Chapters to be covered	Duration	Assignment and Tests
I	Round-off error and computer arithmetic, local and global truncation errors, Algorithms and convergence.	**14-01-26 20-01-26**	
I	Solution of Algebraic and Transcendental equations: Bisection method, Regula-Falsimethod, Secant method, Newton-Raphson's method.	**21-01-26 31-01-26**	
I	Newton's iterative method for finding nth root of a number.	**01-02-26 08-02-26**	
II	Simultaneous linear equations: Gauss-elimination method, Gauss-Jordan method, Triangularization method (LU decomposition method). Crout's method, Cholesky Decomposition method.	**09-02-26 15-02-26**	
II	Iterative methods: Jacobi's method, Gauss-Seidal's method, Relaxation method.	**16-02-26 22-02-26**	**Test I**
III	Finite Differences operators and their relations. Interpolation with equal intervals: Newton's forward and Newton's backward interpolation formulae. Interpolation with unequal intervals: Newton's divided difference, Lagrange's Interpolation formulae.	**23-02-26 28-02-26**	**Assignment I**
	HOLI BREAK	**01-03-26 08-03-26**	

III	Central Differences: Gauss forward and Gauss's backward interpolation formulae,Sterling, Bessel Formula. Piecewise linear interpolation, Cubic spline interpolation.	**09-03-26** **15-03-26**	
III	Numerical Differentiation: First and second derivative of a function using interpolation formulae	**16-03-26** **22-03-26**	
IV	Numerical Integration: Newton-Cote's Quadrature formula, Trapezoidal rule, Simpson's one- third and three-eighth rule, Chebychev formula, Gauss Quadrature formula.	**23-02-26** **29-03-26**	
IV	Numerical solution of ordinary differential equations: Single step methods-Picard's method. Taylor's series method, Euler's method, Runge-Kutta Methods.	**30-03-26** **05-04-26**	**Test II**
IV	Multiple step methods; Predictor-corrector method, Modified Euler's method,Milne-Simpson's method.	**06-04-26** **12-04-26**	**Assignment II**
	Revision of Unit I	**13-04-26** **19-04-26**	
	Revision of Unit II and III	**20-04-26** **26-04-26**	
	Revision of Unit IV	**27-04-26** **05-05-26**	