

**TENTATIVE LESSON PLAN FOR THE SESSION 2025-26 (ODD SEM)**  
**RAJIV GANDHI GOVT. COLLEGE SAHA, AMBALA**  
**DEPARTMENT OF MATHEMATICS**  
**CLASS – B.A./B.Sc. 1<sup>st</sup> Sem, 3<sup>rd</sup> Sem, 5<sup>th</sup> Sem**

| Classes Month/Year | B.A./B.Sc. 1 <sup>st</sup> Sem Calculus                                                                                                                                                                                                                                                                            | B.A./B.Sc. 3 <sup>rd</sup> Sem Differential Equations-I                                                                                                                                                                                                                                                                                                                                                                            | B.A./B.Sc. 5 <sup>th</sup> Sem Sequence and Series                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| July 2025          | $\epsilon$ - $\delta$ definition of limit and continuity of a real valued function. Basic properties of limits, Types of discontinuities,                                                                                                                                                                          | Basic concepts and genesis of ordinary differential equations, Order and degree of a differential equation, Solutions of differential equations of first order and first degree                                                                                                                                                                                                                                                    | Boundedness of the set of real number. Least upper bound and Greatest lower bound of a set.                                                                                                                                                                                                                                                                                                                                           |
| August 2025        | Differentiability of functions, Application of L'Hospital rule to indeterminate forms, Successive differentiation, Leibnitz theorem, Taylor's and Maclaurin's series expansion with different forms of remainder.                                                                                                  | Exact differential equations, Integrating factor, First order higher degree equations solvable for x, y and p, Lagrange's equations, Clairaut's form and singular solutions. Orthogonal trajectories of one-parameter families of curves in a plane.                                                                                                                                                                               | Archimedean, algebraic and ordered property in R. The real number system as a complete ordered field. Neighborhood, Interior point, Isolated point, Limit point. Open set, Close set, Interior of a set, Closure of a set in a real number and their properties. Bolzano - Weierstrass theorem. Open covers, Compact set and Heine- Borel theorem.                                                                                    |
| September 2025     | Asymptotes: Horizontal, vertical and oblique asymptotes for algebraic curves. Asymptotes for polar curves, Intersection of a curve and its asymptotes, Curvature and radius of curvature of curves (cartesian, parametric, polar & intrinsic forms), Newton's method, Centre of curvature and circle of curvature. | Solutions of linear ordinary differential equations with constant coefficients, linear non-homogeneous differential equations. Linear differential equation of second order with variable coefficients. Method of reduction of order, method of undetermined coefficients, method of variation of parameters. Cauchy-Euler equation.                                                                                               | Denumerable non denumerable set Denumerability of integers, rational and non denumerability of real number. Sequence : Real sequence and their convergence. Theorems on limit of sequence, Bounded and monotonic sequence, Cauchy's sequence, Cauchy's general principle of convergence Subsequence and subsequential limits, Limit superior and limit inferior.                                                                      |
| October 2025       | Multiple points, Node, Cusp, Conjugate point, Tests for concavity and convexity, Points of inflexion, Tracing of curves, Reduction formulae.                                                                                                                                                                       | Solution of simultaneous differential equations, total differential equations. Genesis of Partial differential equations (PDE). Concept of linear and non-linear PDEs. Complete solution, general solution and singular solution of a PDE. Linear PDE of first order. Lagrange's method for PDEs of the form: $P(x, y, z) p + Q(x, y, z) q = R(x, y, z)$ , where $p = \partial z / \partial x$ and $q = \partial z / \partial y$ . | Infinite series : Convergence and divergence of infinite series, Comparison test of positive term infinite series, Cauchy's general principle of convergence of series, convergence and divergence of geometric series, Hyper harmonic series or p-series, D'Alembert ratio test, Raabe's test, Logarithmic test, Cauchy's nth root test, De-Morgan and Bertrand test, Gauss test Cauchy's integral test, Cauchy's condensation test. |
| November 2025      | Rectification, intrinsic equation of a curve, Quadrature, Area bounded by closed curves, Volumes and surfaces of solids of revolution. Assignment ,Class Test, KUK Exam                                                                                                                                            | Integral surfaces passing through a given curve. Surfaces orthogonal to a given system of surfaces. Compatible systems of first order equations. Charpit's method, Special types of first order PDEs, Jacobi's method. Second Order Partial Differential Equations with Constant Coefficients. Assignment ,Class Test, KUK Exam                                                                                                    | Alternating series, Absolute and conditional convergence, Leibnitz test, Arbitrary series, Abel's and Dirichlet's test, Insertion and removal of parenthesis Re arrangement of terms in a series, Riemann's re arrangement theorem and Pringsheim's theorem (statement only) Cauchy product of series (definition and example only) Assignment ,Class Test, KUK Exam                                                                  |

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**CLASS – B.B.A. 1<sup>st</sup> Sem, B.Com 1<sup>st</sup> Sem**

| Month/Year     | BBA 1 <sup>st</sup> Sem Business Mathematics -I                                                                                                                 | B.Com.1 <sup>st</sup> Sem Business Mathematics -I                                                                                                                                                                                                                                            |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| July 2025      | Set Theory: Representation of sets, equivalent sets,                                                                                                            | Set Theory: Representation of sets, equivalent sets, power set,                                                                                                                                                                                                                              |
| August 2025    | power set, complement of a set. Venn Diagrams: Union and Intersection of sets, De-Morgan's laws.                                                                | complement of a set. Venn Diagrams: Union and intersection of sets, De-Morgan's laws; Logical statements and truth tables. Logarithms: Laws of operation, log tables; Arithmetic and geometric progression.                                                                                  |
| September 2025 | Quadratic Equations with real roots: Relations between roots and coefficient of the quadratic equations, Methods of solving a quadratic equation                | Matrices and Determinants: Definition of a matrix, order, equality, types of matrices; Operations on matrices: Addition, multiplication and multiplication with a scalar and their simple properties.                                                                                        |
| October 2025   | Binomial Theorem (positive index). Functions, Limits and Continuity Matrix System: Matrices, Basic operations on matrices (Addition, Multiplication, Transpose) | Determinant of a square matrix (upto 3x 3 order): Properties of determinants, minors, co-factors and applications of determinants in finding the area of triangle, adjoint and inverse of a square matrix, solutions of a system of linear equations by example                              |
| November 2025  | Determinant of a square matrix, Inverse of square matrix, Cramer's rule Assignment, Class Test, KUK Exam                                                        | Compound interest and annuities: Different types of interest rates, types of annuities, present value and amount of an annuity (including the case of continuous compounding), valuation of simple loans and debentures, problems related to sinking funds. Assignment, Class Test, KUK Exam |

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**CLASS – B.A. 1<sup>ST</sup> Sem, 3<sup>rd</sup> Sem**

| Classes Month/ Year | B.A. 1 <sup>st</sup> Sem<br>MDC-1 Introductory Mathematics                                                                                                                                                                                                                                                                                                         | B.A. 3 <sup>rd</sup> Sem<br>MDC-3 Mathematics for All                                                                                                                                                                                                                                                                                                                                                                                                                                                       | B.A. 3 <sup>rd</sup> Sem<br>SEC-3 Quantitative Aptitude                                                                                                                                                     |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| July 2025           | Sets and their representations, Empty set, Finite and infinite sets, Subsets, Equal sets, Power sets, Universal set, Union and intersection of sets,                                                                                                                                                                                                               | The concept of a set, Types of sets, Operations on sets, Venn diagram, De-Morgan's laws. The concept of a function,                                                                                                                                                                                                                                                                                                                                                                                         | Linear Equations, Quadratic equations,                                                                                                                                                                      |
| August 2025         | Difference of two sets, Complement of a set, Venn diagram, De-Morgan's laws and their applications. An introduction to matrices and their types, Operations on matrices, Symmetric and skewsymmetric matrices, Minors, Co-factors, Determinant of a square matrix, Adjoint and inverse of a square matrix, Solutions of a system of linear equations up to order 3 | Elementary functions and their graphical representation. Solution of simple quadratic and cubic equations, Solution of simultaneous linear equations up to three variables. Arithmetic progression, Geometric progression.                                                                                                                                                                                                                                                                                  | System of algebraic equations in two variables and their applications in simple problems: Problems on ages, Clocks.                                                                                         |
| September 2025      | Complex numbers, Operations on complex numbers, Modulus and argument of a complex number. Linear inequalities, Algebraic solutions of linear inequalities in two variables and their graphical representation. Quadratic equations, Solution of quadratic equations.                                                                                               | The concept of differentiation, differentiation of simple functions, second order differentiation, Maxima and minima of a function, Use of differentiation for solving problems related to real-life situations. Integration of simple algebraic, trigonometric and exponential functions                                                                                                                                                                                                                   | Time and distance: Problems based on trains, Boats and Streams, Pipes and Cistern, Work and time: Problems on work and time, Work and wages.                                                                |
| October 2025        | Arithmetic progression, Geometric progression, Harmonic progression, Arithmetic mean (A.M.), Geometric mean (G.M.), Harmonic mean (H.M.), Relation between A.M., G.M. and H.M.                                                                                                                                                                                     | Presentation of data: Frequency distribution and cumulative frequency distribution, Diagrammatic and graphical presentation of data, Construction of bar, Pie diagrams, Histograms, Frequency polygon, Frequency curve and Ogives. Measures of central tendency: Arithmetic mean, Median, Mode, Geometric mean and Harmonic mean for ungrouped and grouped data. Measures of dispersion: Concept of dispersion, Mean deviation and its coefficient, Range, Variance and its coefficient, Standard deviation | Simple interest, Compound Interest, Partnership. Basic idea of set theory to solve practical problems. Trigonometric ratios and identities, Height and distance.                                            |
| November 2025       | Straight lines: Slope of a line and angle between two lines, Different forms of equation of a line: Parallel to co-ordinate axes, Point-slope form, Slope-intercept form, Two-point form, General form; Distance of a point from a straight line. Standard form of a circle and its properties. Assignment, Class Test, KUK Exam                                   | Correlation: Concept and types of correlation, Methods of finding correlation: Scatter diagram, Karl Pearson's coefficient of correlation, Rank correlation. Linear regression: Principle of least square, Fitting of straight line, Two lines of regression, Regression coefficients. Solution of differential equations of first order and degree one with variable separable. Assignment, Class Test, KUK Exam                                                                                           | Basic idea of Permutations and Combinations, Events and sample space, Probability. Data interpretation: Raw and grouped data, Bar Graph, Pie Chart, Mean, Median and Mode. Assignment, Class Test, KUK Exam |

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