

# Department of Mathematics

Even Semester Session 2020-21

B.A./B.Sc(Med)/B.Med)/BBA  
 Class: B. Com. Sem.-  
 Subject:

Class :- B.A / B.Sc. I<sup>st</sup> Year  
 Paper - Vector Calculus

| Name of Assistant / Associate Professor | Period                     | Topics to be covered  | Academic activities to be organized | Topic of Assignments / Tests to be given to the students |
|---|----------------------------|---|-------------------------------------|--|
| Sudesh Kumari                           | 12-04-21<br>to<br>15-04-21 | Scalar and vector product of three vectors, Product of four vectors   |                                     |  |
|   | 16-04-21<br>to<br>30-04-21 | Reciprocal vectors, vector differentiation, scalar valued point functions, vector valued point functions, derivative along a curve, directional derivative  | Assignment I                        | Unit-I   |
|   | 01-05-21<br>To<br>11-05-21 | Gradient of a scalar point function, geometrical interpretation of grad $\phi$ , Character of $\nabla$ as a point function, Divergence and curl of vector point function, character of $\text{div } \vec{F}$ and $\text{curl } \vec{F}$ as a point function, examples, Gradient, divergence and curl of sums and product and their related vector identities, Laplacian operator, 3- Orthogonal Curvilinear Co-ordinates, Conditions for orthogonality, fundamental | Test                                | Unit-II  |
|   | 12-05-21<br>To<br>25-05-21 |   |                                     |  |
|   | 26-05-21<br>To<br>10-06-21 |   |                                     |  |
|   | 11-06-21<br>To<br>20-06-21 |   |                                     |  |
|   | 21-06-21<br>To<br>30-6-21  |   | Assignment II                       | Unit-III   |
|   | 1-07-21<br>To<br>15-07-21  | Triad of mutually orthogonal unit vectors, Gradient, divergence, curl, and Laplacian operators in terms of orthogonal curvilinear co-ordinates, Cylindrical co-ordinates, spherical co-ordinates, vector integration, line integral, surface integral, volume integral, theorem of Gauss, Green, Stokes and Problems based on these   |                                     |  |
|   | 16-07-21<br>To<br>31-07-21 |   |                                     |  |
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Even  
**LESSON PLAN** (2<sup>nd</sup> Semester) Session 2020-21

B.A./B.Sc(Med)/B.Med)/BBA  
 Class: B. Com. Sem.-  
 Subject:

Class - B.A/B.Sc. III<sup>rd</sup> Year  
 Paper - Dynamic

| Name of Assistant / Associate Professor | Period                     | Topics to be covered  | Academic activities to be organized | Topic of Assignments / Tests to be given to the students |
|---|----------------------------|---|-------------------------------------|--|
| Sudesh Kumari                           | 12-04-21<br>to<br>14-04-21 | Some basic Concept and Definition- Displacement of particle, velocity, Expression for velocity at a point,  |                                     |  |
|   | 15-04-21<br>to<br>30-04-21 | Acceleration, Expression for acceleration at any instant, Distance travelled in $n^{\text{th}}$ second, particle projected vertically downwards and upward under gravity  |                                     |  |
|   | 1-05-21<br>to<br>10-05-21  | Motion along a plane curve - velocity and acceleration along the Co-ordinate Axes   | Test 1                              | Unit-I   |
|   | 11-05-21<br>to<br>18-05-21 | Angular velocity and angular acceleration along a plane curve, Motion of particle along a plane curve with constant angular acceleration, Radial and Transverse velocity and acceleration (Polar Co-ordinate & Interimic Co-ordinate) | Assignment I                        | Unit-II  |
|   | 20-05-21<br>to<br>10-06-21 | Relative Motion - Relative velocity and acceleration  |                                     |  |
|   | 11-06-21<br>to<br>20-06-21 | Simple Harmonic Motion, Elastic string, Mass, Momentum and force,   |                                     |  |
|   | 21-06-21<br>to<br>30-06-21 | Newton's law of Motion<br>Work, Power and Energy, Definition of conservative force and  |                                     |  |
|   | 1-07-21<br>to<br>10-07-21  | Impulsive forces, Motion on smooth and rough plane Curves, Projectile Motion of a particle in a plane   | Assignment II                       | Unit-III   |
|   | 11-07-21<br>to<br>20-07-21 | Vector angular velocity, General motion of a rigid body, Central orbits, Kepler's law of motion   |                                     |  |
|   | 21-07-21<br>to<br>31-07-21 | Motion of a particle in 3-D<br>Acceleration in terms of different Co-ordinate systems   |                                     |  |

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LESSON PLAN (Odd Semester) Session 2020-21

class - BBA I  
Paper - Business Mathematics

B.A./B.Sc(Med.)/(B.Med.) / BBA  
Class: B. Com. Sem.- Subject:

| Name of Assistant / Associate Professor | Period                     | Topics to be covered   | Academic activities to be organized | Topic of Assignments / Tests to be given to the students |
|---|----------------------------|--|-------------------------------------|--|
| Sudesh Kumari                           | 12-04-21<br>to<br>15-04-21 | Theory of Sets - Meaning, elements, types, presentation and Equality of sets, Union, intersection, complement        |                                     |  |
|   | 16-04-21<br>to<br>30-04-21 | and difference of sets, Venn diagrams, Cartesian product of two sets<br>II - Indices & logarithms, arithmetic        |                                     |  |
|   | 01-05-21<br>to<br>11-05-21 | and geometric progressions; sum of first $n$ natural numbers, sum of squares and cubes of first $n$ natural numbers. | Assignment<br>I                     | Unit - I   |
|   | 12-05-21<br>to<br>25-05-21 | III - Linear and Quadratic equations; Permutations,  |                                     |  |
|   | 26-05-21<br>to<br>10-06-21 | Combinations and binomial theorem (positive index).  | Test -                              | Unit - II  |
|   | 11-06-21<br>to<br>20-06-21 | Differentiation and integration of standard algebraic functions  |                                     |  |
|   | 21-06-21<br>to<br>30-06-21 | Matrices - Types, properties, addition, multiplication,  | Assignment                          | Unit - III   |
|   | 01-07-21<br>to<br>15-07-21 | Transpose and inverse of matrix, Properties of   |                                     |  |
|   | 16-07-21<br>to<br>31-07-21 | determinant, Solution of Simultaneous linear Equations.  |                                     |  |
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LESSON PLAN (1<sup>st</sup> Semester) Session 2020-21

Class - BCA 2<sup>nd</sup> Year  
Paper - Mathematical Foundation - IV

B.A./B.Sc(Med)/B.Med/BBA  
Class: B. Com. Sem.- Subject:

| Name of Assistant / Associate Professor | Period                     | Topics to be covered  | Academic activities to be organized | Topic of Assignments / Tests to be given to the students |
|---|----------------------------|---|-------------------------------------|--|
| Sudesh Kumari                           | 15-04-21<br>to<br>30-04-21 | Partial derivatives of first and second order, Euler's theorem on homogeneous functions, Differentiation of implicit functions and                              |                                     |  |
|   | 02-05-21<br>To<br>11-05-21 | Implicit functions, The notion of total differential, Extreme values, Maxima and Minima   |                                     |  |
|   | 12-05-21<br>To<br>25-05-21 | of function of two or more variables, Lagrange's Method of Multipliers  | Assignment<br>I                     |  |
|   | 26-05-21<br>To<br>10-06-21 | Reduction formulae, Rectification of curve represented by Cartesian, parametric and polar   |                                     | Unit - I   |
|   | 11-06-21<br>To<br>20-6-21  | forms, Intrinsic Equation of Curve, Quadrature - Area of Curve and  |                                     |  |
|   | 21-06-21<br>30-06-21       | area of surface of solid of revolution in Cartesian, parametric and polar form  | Test                                | Unit - II  |
|   | 1-07-21<br>15-07-21        | Jacobian, Double and triple integration, substitution method for double and triple integrals, Application   |                                     |  |
|   |                            | of double and triple integrals for finding volume & surfaces.   | Assignment<br>II                    | Unit - III   |
|   | 16-07-21<br>To<br>31-07-21 | Beta and Gamma functions, their properties and relationships, Differentiation under integral sign, Equation and simple properties of spheres, cones, cylinders. |                                     |  |
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LESSON PLAN (4th Semester) Session 2020-21

Class - B.A / B.Sc. 2<sup>nd</sup> Year

Paper I - Programming in C and Numerical Methods

B.A./B.Sc(Med.)/(M.Med.)/BBA  
Class: B. Com. Sem.- Subject:

| Name of Assistant / Associate Professor | Period   | Topics to be covered   | Academic activities to be organized | Topic of Assignments / Tests to be given to the students |
|---|--|--|-------------------------------------|--|
| Sudesh Kumar                            | 15-04-21<br>to<br>20-04-21   | Programmer's model of a computer, Algorithms, Flow charts  |                                     |  |
|   | 21-04-21<br>to<br>27-04-21   | Data types, operators and Expressions, Input/output functions, Decisions Control structure                   |                                     |  |
|   | 28-04-21<br>to<br>05-05-21   | Decision statements, logical and Conditional statements, Implementation of Loops                             | Assignment I                        | Unit-I   |
|   | 06-05-21<br>to<br>15-05-21   | Switch statements and Case control structures, functions, Preprocessors and Arrays                           |                                     |  |
|   | 16-05-21<br>to<br>25-05-21   | Strings, character data type standard string handling functions, Arithmetic operations on characters         | Test-I                              | Unit-II  |
|   | 26-05-21<br>to<br>05-06-21   | Structures: Definition, use of structure and Arrays and arrays in structures, Pointers - Pointers, data type |                                     |  |
|   | 06-06-21<br>to<br>10-06-21   | Pointers and arrays, Pointers and functions, Solution of Algebraic and transcendental equations              |                                     |  |
|   | 11-06-21<br>to<br>19-06-21   | Bisection Method, Regula Falsi Method, Secant Method,  | Assignment II                       | Unit-III   |
|   | 20-06-21<br>to<br>1-07-21  | Newton-Raphson's Method Newton's iterative method for finding $p^{\text{th}}$ root of a                      |                                     |  |
|   | 2-07-21<br>to<br>10-07-21  | Number, order of convergence of above methods, SLAB - Gauss elimination method, Gauss-Jordan method,         |                                     |  |
| 11-07-21<br>to<br>31-07-21              | Triangulation Method, Crout's Method, Cholesky decomposition method, Iterative Method, Jacobi's method, Gauss-Seidel's Method Relaxation Method. |  |                                     |  |

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Even

LESSON PLAN (Odd Semester) Session 2020-21

Class :- B.A / B.Sc 1st year Sem II

B.A./B.Sc(Med)/ (N.Med) / BBA  
Class: B. Com. Sem.-

Subject: Mathematics

Paper :- Ordinary Diff. Equations

| Name of Assistant / Associate Professor | Period                      | Topics to be covered   | Academic activities to be organized | Topic of Assignments / Tests to be given to the students |
|---|-----------------------------|--|-------------------------------------|--|
| SH. SATNAM                              | 05-04-21<br>To 15-04-21     | Geometrical Meaning of a Differential Equations<br>Exact D.E. Integrating Factor   |                                     |  |
|   | 16-04-2021<br>To 30-04-2021 | First order Higher order equations<br>Lagrange's equations; Clairaut's equations, Equation Reducible to Clairaut's Equation (Form) Singular Solu | Assignment I                        | Unit I   |
|   | 01-05-2021<br>To 11-05-2021 | Orthogonal Trajectories in Cartesian Coordinates and Polar Coordinates<br>Self Orthogonal Family of Curves                                       |                                     |  |
|   | 12-05-2021<br>To 25-05-2021 | L.D.E. with Constant Coefficients<br>Homogeneous Linear O.D.E.<br>Equations Reducible to Homogeneous   |                                     |  |
|   | 26-05-2021<br>To 10-06-2021 | L.D.E. of Second Order. Reduction To Normal Form. Transformation of the equation by changing dep. / ind. vars                                    | Test                                | Unit II  |
|   | 11-06-2021<br>To 20-06-21   | Solution by operators of Non-Homo. Linear D.E. Reduction of order of a D.E. Method of Variation of Parameters.                                   |                                     |  |
|   | 21-06-21<br>To 30-06-21     | Method of Undetermined Coefficients<br>Ordinary simultaneous O.E. Solution of Simultaneous D.E. involving operators $x$ or $t$ . etc.            |                                     |  |
|   | 1-07-21<br>To 15-07-21      | Simultaneous equations of the form $Pdx + Qdy + Rdz = 0$ . Condition for $Pdx + Qdy + Rdz = 0$ to be exact                                       | Assignment II                       | Unit III   |
|   | 16-07-2021<br>To 31-07-2021 | General Method of Solving $Pdx + Qdy + Rdz = 0$ by taking an Integrating Factor. Method of auxiliary Equations.                                  |                                     |  |
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(Dept of Maths)

# Department of Mathematics

**LESSON PLAN** (Odd Semester) Session 2020-21  
Even

B.A./B.Sc(Med)/ (N.Med) / BBA  
Class: B. Com. Sem.-  
Subject: Mathematics

class:- B.C.A. 1st year Sem-IIrd  
Paper :- Mathematical Foundation II

| Name of Assistant / Associate Professor | Period                       | Topics to be covered  | Academic activities to be organized | Topic of Assignments / Tests to be given to the students |
|---|------------------------------|---|-------------------------------------|--|
| SH. SATNAM                              | 01-04-21<br>To<br>20-04-21   | Propositions and logical operators, Truth Tables and Propositions generated by a set. Equivalence and Implications, Law of logic, Mathematical system |                                     |  |
|   | 21-04-21<br>To<br>05-05-21   | Proposition over a universe, Mathematical Induction, Quantifiers<br>Binary operation on a non-empty set.  |                                     |  |
|   | 06-05-21<br>To<br>20-05-21   | Groups, Subgroups, Normal Subgroups, Cosets, Factor groups. Rings,  | Assignment 1st                      | Unit I   |
|   | 01-05-21<br>To<br>05-06-21   | Subrings Ideals Factor Rings, Prime Ideals, Minimal Ideal, Fields Direct product of groups, Isomorphism of groups and rings.                          |                                     |  |
|   | 06-06-21<br>To<br>16-06-21   | Addition and Multiplication of matrices, Laws of Matrix Algebra<br>Singular and Non-Singular Matrix   | Test                                | Unit II  |
|   | 17-06-21<br>To<br>30-06-21   | Inverse of a matrix, Rank of a matrix, Rank of the product of two matrices.   |                                     |  |
|   | 01-07-21<br>To<br>15-07-21   | System of Linear Equation ch. equations of a square matrix<br>Caley Hamilton Theorem, Eigen Value Eigen vectors                                       | Assignment II                       | Unit III   |
|   | 16-07-21<br>To<br>31-07-2021 | Eigen values and Eigen vectors of symmetric Matrix, Skew symmetric, Hermitian and Skew Hermitian Matrices<br>Diagonalization of a square matrix       |                                     |  |
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# Department of Mathematics

Even

## LESSON PLAN (Odd Semester) Session 2020-21

B.A./B.Sc.(Med.)/(N.Med.) / BBA  
 Class: B. Com. Sem.- Subject: Mathematics

Class : B.A./B.Sc. IIIrd year Sem VI  
 Paper : - Linear Algebra

| Name of Assistant / Associate Professor | Period                     | Topics to be covered  | Academic activities to be organized | Topic of Assignments / Tests to be given to the students |
|---|----------------------------|---|-------------------------------------|--|
| SH. SATNAM                              | 06-03-21<br>To<br>20-03-21 | Vector Spaces, Subspace, Sum and Direct Sum of Subspace, Linear Spgn, Linearly Independent and Dependent subsets of a vector space. Finitely generated V.S. |                                     |  |
|   | 21-03-21<br>To<br>31-03-21 | Existence Theorem for basis of a finitely generated V.S. Finite Dimensional V.S. Invariance of the number of elements of basis sets                         |                                     |  |
|   | 01-04-21<br>To<br>15-04-21 | Dimensions, Quotient space and its dimension, Homo. and Isomorphism of V.S. Linear Transf. Dual Space and Bidual space.                                     | Assignment I                        | Unit I   |
|   | 16-04-21<br>To<br>25-04-21 | Annihilator of subspace, of finitely dim. vector space. Null space, Range space of a linear transformation Rank and Nullity theorem.                        |                                     |  |
|   | 26-04-21<br>To<br>15-05-21 | Algebra of Linear Transformation, Homom. of Linear Transformation, Singular and Non-Singular Linear Transf.   |                                     |  |
|   | 16-05-21<br>To<br>31-05-21 | Matrix of Linear Transformation Change of basis Eigen Value and Eigen Vectors of Linear Transformation.   | Test                                | Unit II  |
|   | 01-06-21<br>To<br>15-06-21 | Inner Product space Cauchy Schwarz Inequality Orthogonal vectors Orthogonal Complements Orthogon. sets and Basis  |                                     |  |
|   | 16-06-21<br>To<br>30-06-21 | Bessel's Inequality, Orthogon. of vectors space for finite elements, Gram Schmidt Orthogonalization Process.  | Assignment II                       | Unit III   |
|   | 26-06-21<br>To<br>30-06-21 | Adjoint of Linear Transformation and its properties Unitary Linear Transf.  |                                     |  |
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C. Dept of Math



# Department of Mathematics

Even

## LESSON PLAN (Old Semester) Session 2020-21

CLASS :- B.A./B.Sc. II<sup>nd</sup> year Sem IV

B.A./B.Sc.(Med.)/(N.Med.)/BBA

Class: B. Com. Sem.-

Subject: MATHEMATICS

Paper :- Sequence and Series

| Name of Assistant / Associate Professor | Period                         | Topics to be covered   | Academic activities to be organized | Topic of Assignments / Tests to be given to the students |
|---|--------------------------------|--|-------------------------------------|--|
| SH. SATNAM                              | 06-03-21<br>To<br>15-03-21     | Boundedness of the set of real numbers. Least upper bound greatest lower bound of a set nbd's interior points  |                                     |  |
|   | 16-03-2021<br>To<br>31-03-2021 | Isolated points Limit points open sets, closed sets interior of a set, Closure of a set in real numbers and their properties.  |                                     |  |
|   | 01-04-2021<br>15-04-2021       | Bolzano - Weierstrass Theorem. Open and Compact sets and Heine-Borel Theorem. Sequence. Real sequence and their convergence.   |                                     |  |
|   | 15-04-2021<br>To<br>30-04-2021 | Thm on limits of sequence bounded and monotonic sequences. Cauchy's seq. Cauchy general principle of convergence. Subsequence subsequence has limit  | Assignmt I                          | Unit I   |
|   | 01-05-2021<br>To<br>11-05-2021 | Infinite series convergence and Divergence of infinite series Comparison tests of positive terms infinite series Cauchy's general principle of convergence   |                                     |  |
|   | 12-05-2021<br>To<br>22-05-2021 | Convergence and Divergence of geometric series. Hyper Harmonic series of p-series. Infinite series: D'Alembert's Ratio Test Raabe's Test Logarithmic Test p-Test Morgan and Bertrand Test. Cauchy nth Root Test. | Test                                | Unit II  |
|   | 23-05-2021<br>To<br>31-05-2021 | Gauss Test Cauchy's Integral Test Cauchy Condensation Test Alternating series Leibnitz Test  |                                     |  |
|   | 11-06-2021<br>To<br>20-06-21   | Absolute and Conditional Convergence Arbitrary series Abel's Lemma, Abel's Test Dirichlet's Test Interchange and Removal of terms in series Rearrangement of Term in series                                      | Assignmt II                         | Unit III   |
|   | 21-06-21<br>To<br>30-06-2021   | Dirichlet's Theorem, Reimann's Rearrang. Thm. Riemann's Thm. Multiplication of a series Cauchy's Product of series. convergence and Absolute convergence infinite product  |                                     |  |
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*Co-Optd Maths*