| Name of the Assistant Professor: Dr. Ashish |
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| Class: B.A. 1st Sem |
| Subject: MATHEMATICS |
| Paper: Calculus |
| Academic Session 2023-24 |
| (Thursday to Saturday) |
| (27July, 2023 Onwards) |
| Week 4 |
| Successive differentiation |

| August |
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| Week 1 |
| Leibnitz theorem. |
| Week 2 |
| Maclaurin and Taylor series expansions |
| Week 3 |
| Curvature, radius of curvature for Cartesian curves |
| Week 4 |
| Curvature, radius of curvature for parametric curves |

| September |
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| Week 1 |
| Curvature, radius of curvature for polar curves. |
| Week 2 |
| Newton's method. Radius of curvature for pedal curves. |
| Week 3 |
| Tangential polar equations. |
| Week 4 |
| Centre of curvature. Circle of curvature. |
| Week 5 |
| Chord of curvature, evolutes. |

| October |
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| Week 1 |
| Test of 1st Unit |
| Week 2 |

| Asymptotes in Cartesian and polar coordinates, intersection of curve and its asymptotes. |
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| **Week 3** <br> Tests for concavity and convexity. Points of inflexion. Multiple points. |
| **Week 4** <br> Cusps, nodes & conjugate points Type of cusps |

| **November** |
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| **Week 1** <br> Test of second unit |
| **Week 2** <br> Reduction formulae. Rectification, intrinsic equations of curve. |
| **Week 3** <br> Applications of single integration: Quadrature (area), Sectorial area. |
| **Week 4** <br> Area bounded by closed curves. Volumes and surfaces of solids of revolution (Applications Only). |
| **Week 5** <br> Theorems of Pappu's and Guilden. |

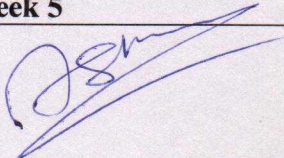| **December** |
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| **Week 1** <br> Multiple Integarls: Double integrals in cartesian and polar coordinates, area and volume by Double integrals, |
| **Week 2** <br> Triple integrals cartesian, cylindrical and spherical coordinates, volume of solids by Triple integrals |

| Name of the Assistant Professor:  Dr. Ashish |
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| Class: B.A. 3rd Sem |
| Subject: MATHEMATICS |
| Paper: Numerical Methods with Programming in C |
| Academic Session 2023-24 |
| (Thursday to Saturday) |
| **August (27 July, 2023 Onwards)** |
| **Week 4** <br> Programmer's model of a computer, |
| **Week 4** <br>  Algorithms, Flow charts, |
| **Week 5** <br>  Data types |

| **August** |
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| **Week 1** <br> Algorithms, Flow charts, |
| **Week 2** <br> Flow charts |
| **Week 3** <br> Data types |
| **Week 4** <br> Operators and expressions, |

| **September** |
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| **Week 1** <br> Input/outputs functions. |
| **Week 2** <br> Decisions control structure: Decision statements, |
| **Week 3** <br> Logical and conditional statements, |
| **Week 4** <br> Implementation of Loops, Switch Statement & Case control structures. |
| **Week 5** |

| Functions, Preprocessors and Arrays. And 1st Unit Test |
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| **October** |
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| **Week 1**<br>Strings: Character Data Type, |
| **Week 2**<br>Standard String handling Functions |
| **Week 3**<br> Arithmetic Operations on Characters |
| **Week 4**<br>Structures: Definition, using Structures, use of Structures in Arrays and Arrays in Structures. |

| **November** |
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| **Week 1**<br>Test of 2nd Unit and Solution of Algebraic and Transcendental equations: Bisection method |
| **Week 2**<br>Regula-Falsi method, Secant method, Fixed Point iterative method, |
| **Week 3**<br>Newton-Raphson's method. Newton's iterative method for finding nth root of a number, |
| **Week 4**<br> Order of convergence of above methods.And test of 3rd Unit |
| **Week 5**<br>Simultaneous linear algebraic equations: Gauss-elimination method, Gauss-Jordan method, |

| **December** |
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| **Week 1**<br>Iterative method, Jacobi's method, Gauss-Seidal's method, |
| **Week 2**<br> Relaxation method. Convergence of Gauss Seidal Method. |

| Name of the Assistant Professor:   Dr. Ashish |
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| Class: B.A. 1st Sem |
| Subject: MATHEMATICS |
| Paper: Algebra |
| Academic Session 2023-24 |
| (Monday to Wednesday) |
|  (24 July, 2023 Onwards) |
| Week 4 |
| Review of matrices, Algebra of matrices |

| August |
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| Week 1 |
| Rank of a matrix, |
| Week 2 |
| Inverse of a matrix |
| Week 3 |
| Linear dependence and independence of rows and columns of matrices |
| Week 4 |
| Eigenvalues, eigenvectors. |
| Week 5 |
| characteristic equation of a matrix |

| September |
| :--- |
| Week 2 |
| Minimal polynomial of a matrix. |
| Week 3 |
| Cayley Hamilton theorem and its use in finding the inverse of a matrix. |
| Week 4 |
| Test of Rank of a Matrix chapter and Test of Characteristic equation of a matrix Chapter |
| Week 5 |
| Applications of matrices to a system of homogeneous linear equations |

| October |
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| Week 1 |
| Applications of matrices to a system of non-homogeneous linear equations |

| Week 2 |
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| Theorems on consistency of a system of linear equations. Unitary and Orthogonal Matrices |

| Week 3 |
|---|
| Diagonalization of a matrices |

| Week 4 |
|---|
| Bilinear and Quadratic forms. |

| November |
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| **Week 1** |
| Test of second unit |

| **Week 2** |
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| Relations between the roots and coefficients of general polynomial equation in one variable. |

| **Week 3** |
|---|
| Solutions of polynomial equations having conditions on roots. |

| **Week 4** |
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| Common roots and multiple roots. |

| **Week 5** |
|---|
| Transformation of equations. |

| December |
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| **Week 2** |
| Nature of the roots of an equation, Descartes's rule of signs. |

| **Week 3** |
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| Solutions of cubic equations (Cardon's method). Biquadratic equations and their solutions. |