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| **Name of the Assistant/Associate Professor: VIJENDER Kumar** |
| **Class and Section: B.Sc /B.A-IIIrd Sem** |
| **Subject: MATHEMATICS** |
| **Paper: Advanced Calculus** |
| **October 2021** |
| **Chapter: Continuous functions** |
| **Chapter: Continuous functions , uniform continuity** |
| **Assignments : Examples based on continuity** |
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| **Chapter: DisscusE the problem** |

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| **November** |
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| **chapter: The derivative and mean value theorems** |
| **Chapter: The derivative and mean value theorems, Lagrange's mean value theorem, Darboux's theorem, Rolle's theorem, Taylor's theorem** |
| **Assignments: Examples related to mean value theorems** |
| **Chapter: Maclaurin's theorem, Cauchy's mean value theorem** |
| **Chapter: Indeterminate forms** |
| **Chapter: Revision of first unit and test** |

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| **Name of the Assistant/Associate Professor: Mr Vijender Kumar** |
| **Class and Section: B.Sc /B.A-IIIRD SEM** |
| **Subject: MATHEMATICS** |
| **Paper: Advanced Calculus** |

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| **December** |
| **Chapter: Limit and continuity of functions of two variables** |
| ***Assignments: Examples*** |
| **Chapter: and continuity of functions of two variables and Partial differentiation** |
| ***Assignments: Examples*** |
| **Chapter: Partial differentiation-Homogeneous functions, Euler's theorem** |
| ***Assignments: Questions based on Euler's theorem*** |
| **Chapter: Differentiability of functions of two variables** |
| ***Assignments: Definitions related to differentiability*** |
| **Chapter:** **Differentiability of a function of two variables** |
| ***Assignments: Test*** |

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| **January 2022** |
| **Chapter: Differentiability of a function of two variables- Implicit function theorem** |
| ***Assignments: Questions based on excercise*** |
| **Chapter: Maximum and minimum of a function of two variables , Lagrange's method of undetermined multipliers** |
| ***Assignments: Examples*** |
| **Chapter: Curves in space ,introduction to curves, Circle of curvature and spherical curvature, normal plane** |
| ***Assignments: Examples*** |
| **Chapter: Circle of curvature and spherical curvature** |
| ***Assignments:***  **Examples** |
| **Chapter: Involutes and evolutes. Concept of a surface and envelopes and test** |

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| **Name of the Assistant/Associate Professor: Mr. Vijender Kumar** |
| **Class and Section: B. Sc III/B.A |||** |
| **Subject: MATHEMATICS** |
| **Paper: Groups and Rings** |
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| **October 2021** |
| **Definition of group and its brief introduction, examples of group and general properties.** |
| **Theorems on group, introduction of subgroups and its examples, subgroup criterion, product, intersection and union of subgroup.** |
| **Cyclic groups and its examples and theorems, Euler function and its generators of groups.** |

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| **November** |
| **Introduction of cosets of a subgroup, theorems on cosets, Index of a subgroup, Lagrange`s theorem and its consequences, introduction to Normal subgroups and simple groups** |
| **Examples and theorems on Normal subgroups, concept of quotient groups, examples and theorems on quotient groups.** |
| **Introduction to Homomorphism and isomorphism of groups and examples, Kernel of homomorphism and Fundamental theorem, Automorphism.** |
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| **Examples and theorems on automorphism and Inner automorphism, Normalizer of a subgroup and examples, centre of a group.** |
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| **Definition of permutation group and alternating group, related theorems, Caley theorem.** |

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| **December** |
| **Introduction to Rings and related examples and theorems, integral domain and its examples, introduction to Field and examples.** |
| Test and assignment |
| **Theorems on fields and integral domain, subring of a ring and examples, characteristic of ring and field and related theorems.** |
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| **Introduction to ideal, their examples, sum, product, intersection, union and related theorems.** |
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| **Principal ideal and principal ideal domain, their examples and theorems.** |
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| Maximal and prime ideal, idempotent and nilpotent element in ring, concept of quotient ring, ring homomorphism and its examples, Fundamental theorem on homomorphism. |
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| **January 2022** |
| **Field of quotient of an integral domain, divisibility in the ring. Unit, prime and irreducible element in ring and their examples.** |
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| **GCD and LCM in ring, Euclidean ring, its example and theorems, theorems on prime and irreducible element.** |
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| **Introduction to polynomial ring, polynomial over ring and integral domain.** |
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| **Division algorithm, irreducibility of polynomial over ring and integral domain, mod-p and the Eisenstein`s criterion for irreducibility of polynomials.** |
| Unique factorization domain and its examples and theorems. |
| **Test and assignment** |
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| Name of the Assistant/Associate Professor: Mr.Vijender kumar |
| Subject: Mathematics |
| Class: B.A. 1st /B.Sc-1st B.Sc. |
| Paper: calculas |
| October 2021 |
| Definition of the limit of a function. Basic properties of limits, |
| Continuous function,classification of discontinuities. Differentiability. |
| Successive differentation,  Leibnitz theorem. |

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| November |
| Asymptotes in Cartesian coordinates, intersection of curve and its asymptotes, asymptotes in  polar coordinates. |
| Curvature, radius of curvature for Cartesian curves, |
| Radious of curvature in parametric curves and polar curves. Centre of curvature. Circle of curvature. Chord of curvature, evolutes. |
| Circle of curvature . chors of curvature . evolutes.  Test |
| Tracing of curves in cartesian and parametric co ordinates  Assignments on curve tracing . |
| December |
| Tracing of curve in polar co ordinates |
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| Assignments: |
| Reduction formulae |
| Assignments |
| Redution formulae . |
| Assignments: assignment on reduction formulae |
| Quadrature sectorial area .  Area bounded by closed curve |
| Assignments: |
| Volumes and solids of revolution  An axis of revolution . volume formulae for two solids |
| Assignments and Test |

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| January 2022 |
| Area of surface of revolution . three forms of the surface formule |
| Assignments: |
| Theorems of pappu's and Guilden . |
| Assignments: |
| Maclaurin amdtaylor series expensions. types of concavity and convexity |
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| points of inflexion . multiple points .cusps nodes and conjugate points  Test. |
| Assignments: |
| Type of cusps .  Test |

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| **Name of the Assistant/Associate Professor: Mr. Vijender Kumar** |
| **Class and Section: B.Sc /B.A-Ist sem** |
| **Subject: MATHEMATICS** |
| **Paper: Solid Geometry** |
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| **October 2021** |
| **Chapter: Review Chapter** |
| **Chapter: General Equation of second degree** |
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| **Chapter: Problems of General Equation of second degree** |

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| **November** |
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| chapter: **General Equation of second degree** |
| **Chapter: Tracing of conic , system of conics** |
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| **Chapter: Plane section of sphere, Sphere through a given circle** |
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| **Chapter: Intersection of two spheres** |
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| **Chapter: Radical plane of two sphere , Co-axial system of sphere** |
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| **December** |
| **Chapter: Cone :Right circular cone** |
| ***Assignments: Examples*** |
| **Chapter: Cone:Enveloping cone and reciprocal cone , cylinder** |
| ***Assignments: Examples*** |
| **Chapter: Central conicoid:Eqation of tangent plane** |
| ***Assignments: Questions based on* Central conicoid:Eqation of tangent plane** |
| **Chapter: Director sphere ,Normal to conicoid** |
| ***Assignments: Examples of* Director sphere, Normal to conicoid** |
| **Chapter:** **Polar plane of point ,Enveloping cone of conicoid** |
| ***Assignments: Test*** |

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| **January 2022** |
| **Chapter: Enveloping cylinder of Conicoid** |
| ***Assignments: Questions based on exercise , problems*** |
| **Chapter: Paraboloids : circular section , Plane section of conicoids** |
| ***Assignments: Examples*** |
| **Chapter: Generating lines** |
| ***Assignments: Examples*** |
| **Chapter: Confocal conicoid, Reduction of second degree** |
| ***Assignments:***  **Examples** |
| **Chapter: Confocal Conics** |
| **Examples of confocal conics.Test** |

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| **Name of the Assistant/Associate Professor: Dr. Neelam** |
| **Class and Section: B.Sc III /B.A |||** |
| **Subject: MATHEMATICS** |
| **Paper: Numerical analysis** |
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| **October 2021** |
| **Finite difference operator, Forward and backward difference operator,Central diff. operator,fundamental theorem of diff. operator,operator E and their properties** |
| **Effect of error in tabular value ,relation b/wdifferent operator,definition of terms interpolation and extrapolation, definition of term interpolation with equal intervals** |
| **interpolation with unequal intervals,difference b/w interpolation with equal intervals** |

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| **November** |
| **newton Gregory formula for forward and backward interpolation, problems, subdivision of interval and related eg .,interpolation with equal intervals and eg. And problems** |
| **divided difference formula and theorems,newton divided difference and ordinary difference and eg. ,** |
| **langrange interpolation formula and eg. ,hermite formula and eg.** |
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| **gauss forward and backward interpolation and related eg. ,** |
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| **bessal formula, sterling formula and eg. And problems ,** |

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| **December** |
| **Probability distribution of random variables ,binomial distributionand eg., poison distribution and eg.** |
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| **binomial distributionand eg., poison distribution and eg.** |
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| **Normal distribution and eg , problems** |
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| **Numerical differentiation derivative if interpolation formula,eigen value formula ,** |
| **Test and assignment** |
| eigen value formula problems ,power method eg. And problems |
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| **January 2022** |
| **jacobi method,eg. Given method ,and eg and problems** |
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| **House holder method and eg. ,QR method, lanczo method,eg** |
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| **Newton quotes quadrature formula ,trepazoidal rule ,Simpsons one third rule and eg.** |
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| **Simpsons three eight rule ,chebychev formula and gauss quadrature formula ,eg** |
| **single step method, picard method ,tailor series and euler method ,runga kutta method and multiple step method and eg.** |
| **Test and assignment** |
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| Name of the Assistant/Associate Professor: Dr. Neelam |
| Class and Section:BSc /B.A-3rd sem |
| Subject:MATH |
| Paper:STATICS |
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| October 2021 |
| Chapter:Composition of Forces  Examples and Exercise |
| Resolution of forces  Examples and Exercise |
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| Chapter: Parallel forces.  Examples and Exercise |
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| November |
| Chapter:Moments  Examples and Exercise |
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| Chapter:Couples  Examples and Exercise |
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| Chapter:Analytical conditions of equilibrium of coplanar forces  Examples and Exercise |
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| Examples and Exercise |
|  |
| Chapter:Problems on Equilibrium oif Roads and Ladders  Examples and Exercise |
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| December |
| Chapter:  Examples and Exercise |
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| Chapter: Friction.  Examples and Exercise |
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| Chapter: Examples and Exercise,Assignment |
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| Chapter: Centre of Gravity.    unit test and assignment |
| Chapter: Forces in three dimensions ,virtual work  Examples and Exercise                Wrenches  Examples and Exercise |
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| January 2022 |
| Chapter:Null lines  Examples and Exercise |
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| Chapter: Poinsots central axis  Examples and Exercise |
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| Chapter: Null planes  Stable equilibrium  Examples and Exercise |
| Chapter:Unstable equilibrium  Examples and Exercise |
| Neutral equilibrium. |
| Examples and exercise |
| Test and assignment |
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| **Name of the Assistant/Associate Professor: Dr. Neelam** |
| **Class and Section: B.A/B.Sc-6th Sem** |
| **Subject: MATHEMATICS** |
| **Paper: Real Analysis** |
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| **October 2021** |
| **Chapter:1**  **Partition of an interval, Norm of partition, Refinement of partition, Upper Sum and Lower Sum, Oscillatory Sum** |
| **Chapter: Lower Riemann integral, Upper Riemann integral, Riemann integral, Example of Riemann integral, Example of Non Riemann integral** |
| **Chapter: Darboux’s Theorem, Application of Darboux’s Theorem, Condition of Integrabililty, Integrabililty of continuous and monotonic functions,** |

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| **November** |
| **Chapter: Integral as a limit of sums, Riemann Sum, Integral as a Riemann Sum, The Fundamental theorem of integral calculus.** |
| **Chapter: Application and example of the Fundamental theorem of integral calculus. Primitive of a function and its application.** |
| **Chapter: Theorem on Continuity and Differentiability of integral function, Application and example of Continuity and Differentiability of integral function.** |
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| **Chapter: Mean value theorems of integral calculus, Application and example of Mean value theorems of integral calculus** |
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| **Chapter: Generalised Mean value theorems of integral calculus, Application and example of Generalised Mean value theorems of integral calculus** |
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| **December** |
| **Chapter: Improper integrals and their convergence**, **Application and example of Improper integrals and their convergence** |
| ***Assignments and test*** |
| **Chapter: Comparison tests to check convergence of Improper integrals, An important Comparison integrals, Application and example of important Comparison integrals** |
| ***Assignments:*** |
| **Chapter: General test for convergence, Absolute convergence, Comparison tests for convergence at infinity.** |
| ***Assignments:*** |
| **Chapter: Abel’s and Dirichlet’s tests, Frullani’s integral, Application and example of Abel’s and Dirichlet’s tests, Application and example Frullani’s integral** |
| ***Assignments:*** |
| **Chapter:** **Integral as a function of a parameter, Application and example of Integral as a function of a parameter. Continuity, Application and example of Continuity** |
| ***Assignments:*** |

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| **January 2022** | |
| **Chapter: Differentiability and integrability of an integral of a function of a parameter**, **Application and example of Differentiability and integrability of an integral of a function of a parameter** | |
| ***Assignments and test*** | |
| **Chapter: Definition and examples of metric spaces, Application and example of metric spaces** | |
| **Chapter: Neighborhoods, limit points, Interior points, Application and example of neighborhoods, Application and example of limit points, Application and example of interior points.** | |
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| **Chapter: Open and Closed sets, Closure and Interior, Boundary Points, Application and example of Open and Closed sets, Application and example of Closure and Interior point, Application and example of Boundary Points,**  **Assignments:** | |
| **metric space and equivalent metri**  **Chapter: Subspace of a Metric space, Equivalent metrics, Application and example of subspace of a cs** | |
| **Cauchy sequences, Completeness, Application and example of Cauchy sequences and completeness, Cantor’s intersection theorem, Baire’s category theorem, contraction Principle,Application and example of Cantor’s intersection theorem, Baire’s category theorem, contraction Principle** | |
| Continuity and Compactness | |
| **Connectedness** | |
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| Name of the Assistant/Associate Professor: Mr. Vijender Kumar |
| Class and Section: B.A/.B.sc.. III-Sem |
| Subject: Mathematics |
| Paper: Partial Differential Equation |
| October 2021 |
| Chapter:1 Partial differential equations: Formation, order and degree, Example of formation of Partial differential equations, Example to find the order and degree of Partial differential equations. |
| Chapter: Linear and Non-Linear Partial differential equations of the first order, Example to check the Linear and Non-Linear Partial differential equations of the first order and Higher Order. |
| Chapter: Classification of the solutions of Partial differential equations, Complete solution, singular solution, General solution, Example to find the solutions of Partial differential equations in various form. |
| November |
| Chapter: Solution of Lagrange’s linear equations, Charpit’s general method of solution. Example to find the solutions of Partial differential equations in various form using Charpit’s general method. |
| Chapter: Compatible systems of first order equations, Condition for Compatibility, Special case to find the Compatibility of Partial differential equations. |
| Chapter: Some standard forms of Partial differential equations and its solutions, Jacobi’s method, Example to find the solutions of Partial differential equations in various forms using Jacobi’s method. |
| Chapter: Linear partial differential equations of second and higher orders, Find complementary function of linear homogeneous partial differential equations with constant coefficients, Method to Find particular integral of linear homogeneous partial differential equations with constant coefficients. |
| Chapter: Non-homogeneous equations with constant coefficients. Find complementary function of linear non-homogeneous partial differential equations with constant coefficients, Method to Find particular integral of linear non-homogeneous partial differential equations with constant coefficients. |
| December |
| Test & Assignments: |

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| Chapter: Method to find the complimentary functions and particular Integrals of Partial differential equation with variable coefficients. Equations reducible to linear equations with constant co-efficient. |
| Assignments: |
| Chapter: Classification of linear partial differential equations of second order. Method to find Classification of linear partial differential equations of second order and solve its exercise given in reference books. . Reduction of Hyperbolic equations to its canonical forms |
| Assignments: |
| Chapter: parabolic and elliptic type’s partial differential equations. Reduction of parabolic equations to its canonical forms, Reduction of elliptic equations to its canonical forms. |
| Solution of general hyperbolic PDE of second order by Riemann’s Method |

January 2022

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| Chapter: Monge’s method for partial differential equations of second order.  Find solution of partial differential equations of second order using Monge’s method. |
| Monge’s method of Solving Rr+Ss+Tt+U(rt-s2 )=V |
| Chapter: Cauchy’s problem for second order partial differential equations and finds its examples and applications. |
| Assignments: |
| Chapter: Characteristic equations and characteristic curves of second order partial differential equation. Method to find Characteristic equations and characteristic curves of second order partial differential equation and solve its exercise. Chapter: Method of separation of variables: Solution of Laplace’s equation and solve its exercise. |
| Wave equation , Method of Separation of variable: Solution of Wave Equation and solve its exercise.Heat equation, solutions of Heat equation.Method of separation of variable.  Test |
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| **Name of the Assistant/Associate Professor: Dr. Neelam** |
| **Class and Section: B.Sc /B.A-1st Sem** |
| **Subject: Mathematics** |
| **Paper Algebra** |

**October 2021**

Symmetric. Skew symmetric Hermiston and skew HERMITION

Symmetric. Skew symmetric Hermiston and skew HERMITION

Rank of a matrix . Inverse of a matrix

**November**

Eigen value and eigen vector with polynomial equation

Shaheed Udham Singh’s Martyrdom Day

Eigen value and eigen vector with polynomial equation

Hayley Hamilton theorem

Matrix system of a linear equation

Matrix system of a linear equation

Consistency theorem of linear equation

Unitary and orthogonal matrix. Test and assignment

**December**

Bilinear and quadratic from

Bilinear and quadratic from

Relation between roots and cofficents of general polynomial in

one variable

one variable

Relation between roots and cofficents of general polynomial in

one variable

Relation between roots and cofficents of general polynomial in

one variable

Solution of polynomial having conditioned on roots

**January 2022**

Comman roots and multiple roots. Transformers of equation

Nature of roots and discard rule of sign

Carden method

Biquadratic method

Test and assignment

Revision +Test