# Maharaja Ranjit Singh College of Professional Sciences, Indore

Department of Mathematics

Lesson Plan - B. Sc. IYear(CS/HONS/PCM/IT/ELEX) (July 2018 -Feb2019)

Subject-Mathematics Paper I- Algebra and Trigonometry

**Teacher - Manoj Joshi**

| Day/Lecture | Unit | Topic |
|---|---|---|
| 1 | 1 | Basics of matrices |
| 2 | 1 | Types of matrices,determinant and its properties |
| 3 | 1 | Rank of matrices |
| 4 | 1 | Question on rank of matrices |
| 5 | 1 | Question on rank of matrices |
| 6 | 1 | Echelon form of matrices and numericals |
| 7 | 1 | Echelon form of matrices and numericals |
| 8 | 1 | Normal form of matrices |
| 9 | 1 | Question on normal form of matrices |
| 10 | 1 | Characteristic equation of matrix |
| 11 | 1 | Eigen values and eigen vector of matrix |
| 12 | 1 | Questions based on eigen values and eigen vectors |
| 13 | 1 | Linearly dependent and independent vectors |
| 14 | 1 | Row rank and column rank |
| 15 | 1 | Practise questions and doubts |
| 16 | 1 | Proof of theorems based on eigen values and eigen vector |
| 17 | 2 | Cayley- Hamilton theorem statement and verification |
| 18 | 2 | Proof of Cayley-Hamilton theorem and numerical problems |
| 19 | 2 | Solution of linear equation by matrix method |
| 20 | 2 | Consistency and inconsistency of linear equation |
| 21 | 2 | Numerical Problems |
| 22 | 2 | Numerical Problems |
| 23 | 2 | Homogoneous linear equations |
| 24 | 2 | Non homogeneous equations |
| 25 | 2 | Theorems on consistency and inconsistency |
| 26 | 2 | Cremer's method of solving linear equation |
| 27 | 2 | Practise questions and doubts |
| 28 | 2 | Practise questions and doubts |
| 29 | 2 | Revision |
| 30 | 3 | Introduction to theory of equation |
| 31 | 3 | Symmetric function of the roots |

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| 32 | 3 | Synthetic division,roots of multiplicity |
| 33 | 3 | GCD of polynomials |
| 34 | 3 | Relation between roots |
| 35 | 3 | Numericals on relation between the roots |
| 36 | 3 | Numericals on relation between the roots |
| 37 | 3 | Transformation of equations,roots with sign change |
| 38 | 3 | Reciprocal equation,roots diminished by h |
| 39 | 3 | Descartes rule ,removal of the terms |
| 40 | 3 | Practise questions and doubts |
| 41 | 3 | Practise questions and doubts |
| 42 | 4 | Logic-logical connectives |
| 43 | 4 | Truth tables,problem on logical connectivity |
| 44 | 4 | Tautology,contradiction,logical equivalence |
| 45 | 4 | Algebra proposition |
| 46 | 4 | Boolean algebra definition |
| 47 | 4 | Examples on Boolean algebra |
| 48 | 4 | Properties of Boolean algebra |
| 49 | 4 | Properties of Boolean algebra |
| 50 | 4 | Properties of Boolean algebra,Boolean functions |
| 51 | 4 | Problems on normal forms |
| 52 | 4 | Algebra of electric circuit |
| 53 | 4 | Parallel and series connection and their problems |
| 54 | 4 | Logic gates and their problems |
| 55 | 4 | Logic gates and their problems |
| 56 | 4 | Practise questions and doubts |
| 57 | 5 | De-Moivre's theorem and it's proof |
| 58 | 5 | Problems on De-Moivre's theorem |
| 59 | 5 | Problems on De-Moivre's theorem |
| 60 | 5 | Expansion of Sine,Cosine and Tan Series |
| 61 | 5 | Direct and Inverse circular functions |
| 62 | 5 | Hyperbolic functions |
| 63 | 5 | Problems on above funtions |

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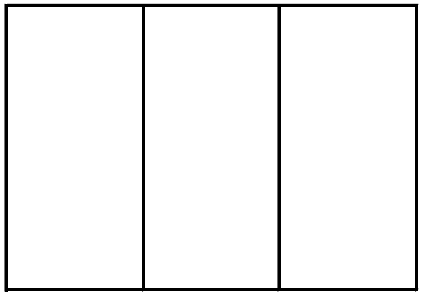
| 64 | 5 | Problems on above funtions |
| 65 | 5 | Expansion of trigonometric functions |
| 66 | 5 | Expansion of trigonometric functions |
| 67 | 5 | Logerithm of complex quantities |
| 68 | 5 | Gregory Series |
| 69 | 5 | Gregory Series |



# Maharaja Ranjit Singh College of Professional Sciences, Indore

Department of Mathematics

Lesson Plan - B. Sc. IYear(CS/HONS/PCM/IT/ELEX) (July 2018 -Feb 2019)

Subject -Mathematics Paper-II Calculus and Differential Equation

**Teacher - Shifa Goyal**

| Day/Lecture | Unit | Topic |
|---|---|---|
| 1 | 1 | Basics of Differentiation |
| 2 | 1 | Successive Differentiation |
| 3 | 1 | nth derivative of standard functions |
| 4 | 1 | nth derivative of standard functions |
| 5 | 1 | Questions based on trignometric transformation |
| 6 | 1 | Questions based on partial fraction |
| 7 | 1 | Application of De-Moivre's theorem |
| 8 | 1 | Proof of Leibnitz theorem and questions |
| 9 | 1 | Numericals on Leibnitz theorem |
| 10 | 1 | Proof of Maclaurin's theorem and questions |
| 11 | 1 | Numericals on Maclaurin and Taylor's theorem |
| 12 | 1 | Asymptote introduction and general method to find asymptote |
| 13 | 1 | Shorter methods to find asymptote |
| 14 | 1 | Asymptote parallel to axes and curvilinear asymptotes |
| 15 | 1 | Asymptotes of polar curves and its intersection with curve |
| 16 | 2 | Curvature,intrnsic formula for radius of curnature |
| 17 | 2 | Cartesian, parametric and pedal formula to find radius of curvature |
| 18 | 2 | Tangents at origin,centre of curvature,chord of curvature |
| 19 | 2 | Concavity,convexity and point of inflexion,singular points |
| 20 | 2 | Multiple points,tangents at origin,cusp and node |
| 21 | 2 | Tracing of curves an introduction |
| 22 | 2 | Tracing of cartesian curves |
| 23 | 2 | Tracing of cartesian curves |
| 24 | 2 | Tracing of cartesian curves |
| 25 | 2 | Tracing of polar curves |
| 26 | 2 | Tracing of polar curves |
| 27 | 2 | Tracing of parametric curves |
| 28 | 2 | Tracing of parametric curves |
| 29 | 3 | Integration of transcendental functions |
| 30 | 3 | Integration of transcendental functions and Hyperbolic functions |
| 31 | 3 | Definite integrals and general properties |
| 32 | 3 | Reduction formulae |
| 33 | 3 | Reduction formulae |
| 34 | 3 | Quadrature and determination of plane curves |
| 35 | 3 | Quadrature of polar curves,area between two curves |
| 36 | 3 | Rectification for cartesian equations |
| 37 | 3 | Rectification for cartesian equations |
| 38 | 3 | Rectification for parametric and polar equations |
| 39 | 3 | Numericals on parametric and polar equations |

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| 40 | 3 | Intrinsic equation from cartesian and polar equations |
| 41 | 4 | Introduction of Linear differential equations and their solution |
| 42 | 4 | Linear differential equations and equation reducible to linear |
| 43 | 4 | Change of variables,exact differential equations and their solutions |
| 44 | 4 | Integrating factor,rules for finding integrating factors |
| 45 | 4 | Rules for finding integrating factors |
| 46 | 4 | Equations solvable for p |
| 47 | 4 | Equations solvable for x and y |
| 48 | 4 | Clairaut's form,Singular solutions |
| 49 | 4 | Geomerical meaning of differential equation,orthogonal trajectries |
| 50 | 4 | Differential equation of orthogonal trajectories,self orthogonal family |
| 51 | 5 | Linear differential equations with constant coefficients |
| 52 | 5 | Auxiliary equation with equal and different roots |
| 53 | 5 | Auxiliary equations with imaginery roots |
| 54 | 5 | General method to find particular integral |
| 55 | 5 | Short methods to find particular integral |
| 56 | 5 | Short methods to find particular integral |
| 57 | 5 | Differential equations reducible to linear equations |
| 58 | 5 | Linear differential equations of second order |
| 59 | 5 | Method of Variation of parameters |
| 60 | 5 | Method of Variation of parameters |

# Maharaja Ranjit Singh College of Professional Sciences, Indore

Department of Mathematics

Lesson Plan - B. Sc. I Year(CS/HONS/PCM/IT/ELEX)(July 2018 -19)

Subject -Mathematics Paper III- Vector Analysis and Geometry

**Teacher - Payal Khandelwal, Manoj Joshi**

| Day/Lecture | Unit | Topic |
|---|---|---|
| 1 | 1 | Introduction of vector triple product,geometrical significance |
| 2 | 1 | Condition of coplanar and non-coplanar vectors |
| 3 | 1 | Vector product of four vectors |
| 4 | 1 | Reciprocal system of vectors and its properties |
| 5 | 1 | Limit,continuity and differentiability of vector functions |
| 6 | 1 | Derivative of scalar product of vectors |
| 7 | 1 | Derivative of cross product and triple product of vectors |
| 8 | 1 | Scalar and vector point function,directional derivatives |
| 9 | 1 | Gradient of scalar point functions |
| 10 | 1 | Theorems,gradient of constant,sum and difference of two functions |
| 11 | 1 | Gradient of product and quotient of two functions |
| 12 | 1 | Unit tangent vector,tangent line and divergence of a vector |
| 13 | 1 | Curl of vector,constant vector and sum of two functions |
| 14 | 2 | Vector integration,definite integral |
| 15 | 2 | Line integral,circulation |
| 16 | 2 | Irrotational vector |
| 17 | 2 | Surface integral |
| 18 | 2 | Volume integral |
| 19 | 2 | Gauss's divergent theorem |
| 20 | 2 | Deductions and applications of Gauss divergence theorem |
| 21 | 2 | Green's theorem |
| 22 | 2 | Stoke's theorem and it's cartesian equivalent |
| 23 | 2 | Application of Stoke's theorem |
| 24 | 2 | Applications of Gauss and Stoke's theorem |
| 25 | 3 | General equation of second degree,conic section and it's nature |
| 26 | 3 | Centre ,axes,eccentricity and foci of conic |
| 27 | 3 | Tracing of parabola and hyperbola |
| 28 | 3 | Tracing of ellipse |
| 29 | 3 | System of conics |
| 30 | 3 | System of conics |
| 31 | 3 | Angle between two curves,orthogonal circles |
| 32 | 3 | Conics passing through 4&5 points |
| 33 | 3 | Radical axis and properties of redical axis |
| 34 | 3 | Confocal conics |
| 35 | 3 | Polar equation of conics |
| 36 | 3 | Polar equation of conics |
| 37 | 4 | Cone and it's equation |
| 38 | 4 | Condition of general equation of 2nd degree to represent cone |
| 39 | 4 | Equation of cone with vertex at origin |

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| 40 | 4 | Generators of the cone |
| 41 | 4 | Reciprocal cone and enveloping cone |
| 42 | 4 | Right circular cone |
| 43 | 4 | Equation with cylinder |
| 44 | 4 | Different numerical examples of cylinder |
| 45 | 4 | Right circular cylinder |
| 46 | 4 | Tangent plane to the cylinder |
| 47 | 4 | Enveloping cone of cylinder |
| 48 | 5 | Central conicoid |
| 49 | 5 | General and standard equation of central conicoid |
| 50 | 5 | Types of conicoids |
| 51 | 5 | Tangent line,tangent plane |
| 52 | 5 | Director sphere,normal lines |
| 53 | 5 | Polar planes,polar lines |
| 54 | 5 | Enveloping cone,enveloping cylinder,locus of chords |
| 55 | 5 | Paraboloid |
| 56 | 5 | Paraboloid |
| 57 | 5 | Plane section of conicoid |
| 58 | 5 | Plane section of conicoid |
| 59 | 5 | Generating lines |
| 60 | 5 | Generating lines |

# Maharaja Ranjit Singh College of Professional Sciences, Indore

Department of Mathematics

Lesson Plan - B. Sc. IIYear(CS/HONS/PCM/IT/ELEX) (July 2018 -19)

Subject -Mathematics Paper-I Abstract Algebra

**Teacher - Manoj Joshi**

| Day/Lecture | Unit | Topic |
|---|---|---|
| 1 | 1 | Basics of set |
| 2 | 1 | Binary operations,definition of group |
| 3 | 1 | Examples of group |
| 4 | 1 | Examples of group,groupoid,semigroup and monoid |
| 5 | 1 | Properties of group |
| 6 | 1 | Modulo groups,residue class |
| 7 | 1 | Subgroup,criterion for subgroup |
| 8 | 1 | Algebra of subgroups |
| 9 | 1 | Subgroup generated by subsets |
| 10 | 1 | Order of element and it's theorem |
| 11 | 1 | Theorems related with order of group |
| 12 | 1 | Cyclic group and it's examples |
| 13 | 1 | Properties of cyclic group |
| 14 | 2 | Coset and it's definition and examples |
| 15 | 2 | Theorems on cosets |
| 16 | 2 | Theorems on cosets |
| 17 | 2 | Coset decomposition and Lagrange's theorem |
| 18 | 2 | Normal subgroups,definition and examples |
| 19 | 2 | Theorems on normal subgroups |
| 20 | 2 | Theorems on normal subgroups |
| 21 | 2 | Algebra of normal subgroups |
| 22 | 2 | Self conjugate elements and centre of group |
| 23 | 2 | Quotient group |
| 24 | 2 | Theorems on quotient groups |
| 25 | 3 | Homomorphism and Isomorphism |
| 26 | 3 | Properties of Hpmomorphism |
| 27 | 3 | Theorems of Homomorphism and Isomorphism |
| 28 | 3 | Kernal of Homomorphism |
| 29 | 3 | Theorems on kernal of Homomorphism |
| 30 | 3 | Fundamental theorem |
| 31 | 3 | Permutation group |
| 32 | 3 | Types and properties of permutation |
| 33 | 3 | Theorems on permutation |
| 34 | 3 | Cyclic permutation,transposition,even-odd permutation |
| 35 | 3 | Theorems on even permutation |

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| 36 | 3 | Cayley's theorem |
| 37 | 4 | Group Automorphism |
| 38 | 4 | Inner Automorphism and it's theorem |
| 39 | 4 | Therems on Automorphism |
| 40 | 4 | Conjugate element and conjugacy relation |
| 41 | 4 | Conjugate class and self conjugate relations |
| 42 | 4 | Self conjugate elements and centre of group |
| 43 | 4 | Normalizer of an element and theorems |
| 44 | 4 | Class equation of finite group |
| 45 | 4 | Centre for group of prime - power order |
| 46 | 4 | Cauchy's theorem for finite abelian group |
| 47 | 4 | Cauchy's theorem for finite non-abelian group |
| 48 | 5 | Ring it's definition |
| 49 | 5 | Examples of rings |
| 50 | 5 | Types of rings |
| 51 | 5 | Properties of rings |
| 52 | 5 | Ring Homomorphism and Isomorphism |
| 53 | 5 | Theorems on ring homomorphism and isomorphism |
| 54 | 5 | Ideals and principle Ideals |
| 55 | 5 | Kernal of ring Homomorphism,Euclidean ring |
| 56 | 5 | Subring and characteristics of rings |
| 57 | 5 | Polynomial ring and it's properties |
| 58 | 5 | Integral domain and field |
| 59 | 5 | Theorems on integral domain and field |
| 60 | 5 | Theorems on integral domain and field |

# Maharaja Ranjit Singh College of Professional Sciences, Indore

Department of Mathematics

Lesson Plan - B. Sc. IIYear(CS/HONS/PCM/IT/ELEX) (July 2018-19)

Subject - Mathematics Paper -II Advanced Calculus

**Teacher - Payal Khandelwal, Shifa Goyal**

| Day/Lecture | Unit | Topic |
|---|---|---|
| 1 | 1 | Definition and limit of sequence |
| 2 | 1 | Examples of convergent sequence |
| 3 | 1 | Types of sequence and it's examples |
| 4 | 1 | Theorems on convergent sequence |
| 5 | 1 | Cauchy's sequence and it's theorems |
| 6 | 1 | Convergence of series |
| 7 | 1 | Test of convergence of series |
| 8 | 1 | Test of convergence of series |
| 9 | 1 | Test of convergence of series |
| 10 | 1 | Alternate series and it's convergence |
| 11 | 1 | Absolute and conditional convergence |
| 12 | 1 | Theorems and related questions |
| 13 | 2 | Continuity of function of one variable and examples |
| 14 | 2 | Continuity in intervals |
| 15 | 2 | Kinds of discontinuity with examples |
| 16 | 2 | Uniform continuity it's theorem and examples |
| 17 | 2 | Differentiability and examples |
| 18 | 2 | Differentiability on an interval and examples |
| 19 | 2 | Chain rule,derivative of inverse function |
| 20 | 2 | Darboux theorem,Roll's theorem |
| 21 | 2 | Problems on Darboux and Roll's theorem |
| 22 | 2 | Langrange's Mean value & Cauchy's mean value theorem |
| 23 | 2 | Taylor theorem and its various forms |
| 24 | 2 | Problems on Taylor's theorem |
| 25 | 3 | Function of two variables with examples |
| 26 | 3 | Limit of function of two variables |
| 27 | 3 | Continuity of function of two variables |
| 28 | 3 | Examples and questions |
| 29 | 3 | Partial differentiation |
| 30 | 3 | Euler's theorem |
| 31 | 3 | Problems based on Euler's theorem |
| 32 | 3 | Change of variable |
| 33 | 3 | Change of variable |
| 34 | 3 | Taylor's theorem of two variables |
| 35 | 3 | Jacobian |

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| 36 | 3 | Jacobian |
| 37 | 4 | Family of curves, Envelopes |
| 38 | 4 | Problems to find envelope |
| 39 | 4 | Evolute and problems based on it |
| 40 | 4 | Maxima and Minima |
| 41 | 4 | Problems to find Maxima and Minima |
| 42 | 4 | Lagrange's undetermined multiplier method |
| 43 | 4 | Beta function and its properties |
| 44 | 4 | Gammma function and its properties |
| 45 | 4 | Problems based on Beta and Gamma function |
| 46 | 4 | Legendre's duplication formula |
| 47 | 5 | Multiple Integral and examples |
| 48 | 5 | Examples of  multiple integral of polar coordinates |
| 49 | 5 | Dirichlet's integral and its problems |
| 50 | 5 | Volume of solid of revolution and examples |
| 51 | 5 | Surface revolution and examples |
| 52 | 5 | Change of order of integration |
| 53 | 5 | Change of order of integration |

# Maharaja Ranjit Singh College of Professional Sciences, Indore

Department of Mathematics

Lesson Plan - B. Sc. II Year(CS/HONS/PCM/IT/ELEX)(July 2018-19)

Subject - Mathematics Paper - III Differential Equation

**Teacher - Shifa Goyal**

| Day/Lecture | Unit | Topic |
|---|---|---|
| 1 | 1 | Power Series solution with numericals |
| 2 | 1 | Series solution by Forbenious method,Numericals |
| 3 | 1 | Series solution by Forbenious method,Numericals |
| 4 | 1 | Bessel function and its properties |
| 5 | 1 | Reccurence relations |
| 6 | 1 | Orthogonality of Bessel's function |
| 7 | 1 | Legendre function |
| 8 | 1 | Generating function of Legendre function |
| 9 | 1 | Roderige's formula,Christofel summmation formula |
| 10 | 1 | Reccurence relations |
| 11 | 2 | Definition of Laplace transformation and some standard functions |
| 12 | 2 | Properties and theorems of Laplace transformation |
| 13 | 2 | Laplace transformation of product of 't' and its powers |
| 14 | 2 | Initial and final value theorem and problems |
| 15 | 2 | Laplace transformation of derivatives |
| 16 | 2 | Laplace transformation of derivatives and realted problems |
| 17 | 2 | Laplace transformation of Integrals |
| 18 | 2 | Laplace trnsformation of periodic functions |
| 19 | 3 | Laplace trnsformation of periodic functions |
| 20 | 3 | Inverse Laplace transformation |
| 21 | 3 | Inverse Laplace transformation of standard functions |
| 22 | 3 | Properties of Inverse Laplace transformation |
| 23 | 3 | Problems based on inverse Laplace transformation |
| 24 | 3 | Problems based on inverse Laplace transformation |
| 25 | 3 | Problems based on inverse Laplace transformation |
| 26 | 3 | Inverse Laplace of Multiplication and division of 'p' |
| 27 | 3 | Convolution theorem and its problems |
| 28 | 3 | Heavside expansion formula and problems |
| 29 | 3 | Application of Laplace transformation |
| 30 | 3 | Application of Laplace transformation |
| 31 | 4 | Partial differential equations of first order |
| 32 | 4 | Problems based on PDE |
| 33 | 4 | Lagranges metod to solve PDE |
| 34 | 4 | Lagranges metod to solve PDE |
| 35 | 4 | Lagranges metod to solve PDE |
| 36 | 4 | Problems of PDE of first order |
| 37 | 4 | Standard form of PDE of order one degree high |
| 38 | 4 | Standard form of PDE of order one degree high |
| 39 | 4 | Standard form of PDE of order one degree high |

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| 40 | 4 | Charpit's general method of solution |
| 41 | 4 | Charpit's general method of solution |
| 42 | 4 | Charpit's general method of solution |
| 43 | 5 | Partial differential equations of higher order |
| 44 | 5 | Examples on Partial differential equations of higher order |
| 45 | 5 | Canninical form |
| 46 | 5 | Canninical form |
| 47 | 5 | Classification of linear PDE of second order |
| 48 | 5 | Homogeneous linear partial differential equation |
| 49 | 5 | Short methods for finding particular integral |
| 50 | 5 | Short methods for finding particular integral |
| 51 | 5 | Short methods for finding particular integral |
| 52 | 5 | Nonhomogeneous linear PDE |
| 53 | 5 | Nonhomogeneous linear PDE |
| 54 | 5 | Nonhomogeneous linear PDE |
| 55 | 5 | Equations reducible to PDE with constant coefficient |
| 56 | 5 | Equations reducible to PDE with constant coefficient |
| 57 | 5 | Equations reducible to PDE with constant coefficient |
| 58 | 5 | Equations reducible to PDE with constant coefficient |
| 59 | 5 | Geometric problems |
| 60 | 5 | Geometric problems |

# Maharaja Ranjit Singh College of Professional Sciences, Indore

Department of Mathematics

Lesson Plan - B. Sc. V semYear(CS/HONS/PCM/IT/ELEX) (July18-Dec18)

Subject - Mathematics Paper-Linear Algebra & Numerical Analysis

**Teacher - Manoj Joshi, Shifa Goyal**

| Day/Lecture | Unit | Topic |
|---|---|---|
| 1 | 1 | Basics of ring and field |
| 2 | 1 | Definition of vector space |
| 3 | 1 | Examples |
| 4 | 1 | Properties of vector space |
| 5 | 1 | Vector subspace,theorems |
| 6 | 1 | Theorems ,Linear and direct sum |
| 7 | 1 | LI,LD vectors,linear span and theorems |
| 8 | 1 | Finite dimentioanal vector space |
| 9 | 1 | Basis and it's theorems |
| 10 | 1 | Basis and it's theorems |
| 11 | 2 | Linear transformations and isomorphism |
| 12 | 2 | Theorems on homomorphism and direct isomorphism |
| 13 | 2 | Theorems |
| 14 | 2 | Matrix representation,theorems |
| 15 | 2 | Examples |
| 16 | 2 | Rank and nullity of linear transformation |
| 17 | 2 | Eigen values and eigen vectors |
| 18 | 2 | Examples |
| 19 | 2 | Cayley-Hamilton theorem |
| 20 | 2 | Diagonalization of matrix |
| 21 | 2 | Quadratic forms |
| 22 | 2 | Orthogonal reduction |
| 23 | 2 | Examples |
| 24 | 2 | Quotient space |
| 25 | 2 | Theorems on quotient space |
| 26 | 3 | Solution of Equations |
| 27 | 3 | Finite differences, Operators, Interpolation |
| 28 | 3 | Forward and backward Difference formulae |
| 29 | 3 | Forward and backward Difference formulae |
| 30 | 3 | Subdivision of interwals and its examples |
| 31 | 3 | Divided differences Interpolation formulae |
| 32 | 3 | Lagrange's Interpolation formulae |
| 33 | 4 | Solution of Simultaneous equations Direct method |
| 34 | 4 | Solution of Simultaneous equations Direct method |
| 35 | 4 | Iterative Method |

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| 36 | 4 | Iterative Method |
| 37 | 4 | Inversion of matrix |
| 38 | 4 | Inversion of matrix |
| 39 | 4 | Examples |
| 40 | 4 | Examples |
| 41 | 4 | Examples |
| 42 | 5 | ODE Eulers and Modified Eulers Method |
| 43 | 5 | Examples |
| 44 | 5 | Single Step R-K Method |
| 45 | 5 | Predictor-Corrector Method |
| 46 | 5 | Milne's Method, Milne's Simpson Method |
| 47 | 5 | Methods on Numerical Differtiation |
| 48 | 5 | Numerical Solution of higher order DE |
| 49 | 5 | Numerical Integration |
| 50 | 5 | Newton Cote's Quadrature formula |
| 51 | 5 | Simson's 1/3 and 3/8 rules, Trapezoidal rule |
| 52 | 5 | Examples |
| 53 | 5 | Gaussian and Quadrature formula |
| 54 | 5 | Examples |
| 55 | 5 | Examples |

# Maharaja Ranjit Singh College of Professional Sciences, Indore

Department of Mathematics

Lesson Plan - B. Sc. VI Year(CS/HONS/PCM/IT/ELEX)(Jan 2018 -June2019)

Subject - Mathematics Paper-Real analysis,Discrete mathematics& Graph Th

**Teacher - Manoj Joshi, Shifa Goyal**

| Day/Lecture | Unit | Topic |
|---|---|---|
| 1 | 1 | Riemann Integral |
| 2 | 1 | Riemann Integral |
| 3 | 1 | Riemann Integral |
| 4 | 1 | Algebra of Riemann integral functions |
| 5 | 1 | Algebra of Riemann integral functions |
| 6 | 1 | Algebra of Riemann integral functions |
| 7 | 1 | Integrability of continuous and monotonic function |
| 8 | 1 | Integrability of continuous and monotonic function |
| 9 | 1 | Examples |
| 10 | 1 | Theorems |
| 11 | 1 | Fundamental theorem of integral calculus |
| 12 | 1 | Mean value theorem,Examples |
| 13 | 2 | Metric space definition and examples |
| 14 | 2 | Neighbourhood,limit point and interior point |
| 15 | 2 | Open set ,close set |
| 16 | 2 | Theorems |
| 17 | 2 | Closure,interior and boundary points |
| 18 | 2 | Subspace of metric space,theorm |
| 19 | 2 | Cauchy sequence and related theorems |
| 20 | 2 | Complete metric space |
| 21 | 2 | Contraction principle ,fixed points |
| 22 | 2 | Complete order field,Glb and Lub property |
| 23 | 2 | Archemedean property,density theorem |
| 24 | 2 | Continuous function and theorems |
| 25 | 2 | Uniform continuity |
| 26 | 3 | Algebra of logic,connectors |
| 27 | 3 | Tautology,contradiction,logical equivalence |
| 28 | 3 | Examples |
| 29 | 3 | Algebra of propositions |
| 30 | 3 | Quntifiers |
| 31 | 3 | Boolean algebra |
| 32 | 3 | Property of boolean algebra |
| 33 | 3 | Examples |
| 34 | 3 | Examples |
| 35 | 3 | Algebra of electric circuits |

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| 36 | 3 | Examples |
| 37 | 4 | Boolean functions,minimal boolean functions |
| 38 | 4 | Disjunctive forms,examples |
| 39 | 4 | Comjunctive forms,examples |
| 40 | 4 | Theorems |
| 41 | 4 | Binary relation,equivalence relation |
| 42 | 4 | Examples |
| 43 | 4 | Partitions,theorems |
| 44 | 4 | Partial order realtions |
| 45 | 4 | Examples |
| 46 | 5 | Graph and its examples |
| 47 | 5 | Multi graph,weighted graph,subgraph |
| 48 | 5 | Theorems |
| 49 | 5 | Walk-path,Connected and disconnected graph |
| 50 | 5 | Circuit, theorems |
| 51 | 5 | Shortest path in weighted graph |
| 52 | 5 | Tree,types of tree and examples |
| 53 | 5 | Properties of tree |