

LESSON PLAN (2022- 2023)

Name of Teacher – Ms. Meena
 Paper – Real and Complex Analysis
 Class – BA/BSC 3rd year

Subject: - Mathematics

Session:- 2022-2023 (Even Sem.)

Weeks With Months	Contents
Jan 31 – Feb 4	Previous Question Paper and Exam Pattern was discussed
Feb 6- Feb 11	Jacobian:- basic definitions and examples Chain rule for Jacobians and related examples Numerical Problems related to Jacobian Functional Dependence and their examples and its numerical problems Beta function: definition and its properties Numerical Problems related to Beta function Gamma function: definition and its recurrence formula Relationship between Beta and Gamma function and their properties. Illustration with examples. Duplication Formula and their examples
Feb 13 - Feb17	Assignments: Presentation of "Jacobian, Beta and Gamma functions" Numerical Problems related to Duplication Formula Evaluation of Double Integrals Examples related to Evaluation of Double Integrals and Substitution Method for Double Integrals and its numerical problems
Feb 20 – Feb 25	Triple integrals – introduction, Substitution Method for Triple Integrals Numerical Problems related to Triple Integrals Application of Double and Triple integrals for finding Area and Volume of Surfaces
Feb 27- March 04	Numerical Problems related to Application of Double and Triple integrals Dirichlet's Integral, Liouville's Extension of Dirichlet's integral Examples related to Dirichlet's Integral
March 06 - March 11	Numerical Problems related to Dirichlet's Integral and Liouville's Extension of Dirichlet's integral Change of order of integration in double integrals Article and its examples and its numerical problems Assignments: Test of "Double and Triple Integrals"
March 13 – March 18	Fourier's series: Definition and its Properties, Fourier expansion of piecewise monotonic functions Euler's Formulae, Fourier series for even and odd functions, Dirichlet's conditions Properties of Fourier Coefficients, Fourier expansion of piecewise monotonic functions and its numerical problems Fourier expansion of functions having points of discontinuity and related examples and its numerical problems Assignments: Presentation of "Fourier's series"
March 20 - March 25	Change of Intervals property and its examples Half range series and its examples Parseval's identity for Fourier series and its examples and its numerical problems Assignments: Test of "Fourier's series"
March 27 - April 01	Introduction to Complex Plane and Stereographic projection of complex numbers Examples related to Stereographic projection of complex numbers

	<p>Complex Functions definitions, Limit, continuity, uniform continuity of complex functions</p> <p>Examples related to Limit, continuity, uniform continuity of complex functions</p> <p>Differentiability of complex function, Rule of differentiation and geometric interpretation of the derivative</p> <p>Numerical Problems related to Limit, continuity, Differentiability, uniform continuity of complex functions</p>
April 03 – April 08	<p>Analytic functions and Necessary condition for a function to be analytic, Cauchy-Riemann equations</p> <p>Sufficient condition for a function to be analytic and their examples</p> <p>Cauchy-Riemann equations in Polar form, Orthogonal System</p>
April 10 - April 15	<p>Harmonic functions and its examples, Construction of Analytic functions by Milne-Thompson's Method, by Exact Differential Method and their examples, Applications of Analytic functions to field and flow problems and numerical problems related to these topics.</p> <p>Multi-valued Functions, Branch, Branch Cut, Branch Points, Exponential function, properties of exponential functions.</p> <p>Trigonometry functions and its properties, Hyperbolic functions and its properties</p>
April 17 - April 22	<p>The Logarithmic functions and its properties, Inverse trigonometric and hyperbolic functions and its properties</p> <p>Assignments: Test of "Fourier's series"</p> <p>Mappings, Translation mappings, Rotation mappings and their examples</p> <p>Magnification, Rotation and Magnification, and their examples</p> <p>Inversion mappings and its examples</p> <p>Conformal mappings and its properties</p> <p>Examples of Conformal mappings</p> <p>Linear transformation, Bilinear transformation</p>
April 24 - April 29	<p>Assignments: Presentation of "Calculus of Complex Functions"</p> <p>Articles related to Linear transformation, Bilinear transformation and its examples</p> <p>Critical points and its examples</p> <p>Fixed points and their examples</p> <p>Nature of Bilinear transformation and its examples</p> <p>Some articles based on Bilinear transformation</p> <p>Examples based on Bilinear transformation</p> <p>Cross Ratio and its articles with examples</p> <p>Inverse Points and their articles</p> <p>Some examples based on Cross Ratio, Inverse Points</p>
May 01 - May 06	<p>Assignments: Test of "Calculus of Complex Functions"</p> <p>Numerical Problems related to Cross Ratio, Inverse Points</p> <p>Exponential Transformations and its examples, Article based on Exponential Transformations</p> <p>Logarithmic Transformations and its examples</p> <p>Article based on Logarithmic Transformations</p> <p>Trigonometric transformations and its examples, Article based on Trigonometric transformations</p> <p>Linear fractional transformations and its examples, Article based on Linear fractional transformation</p>
May 08 - May 13	<p>Article based on Logarithmic Transformations</p> <p>Trigonometric transformations and its examples. Article based on</p>

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Trigonometric transformations
 Linear fractional transformations and its examples, Article based
 Linear fractional transformation

	<p>Joukowski's transformation and its examples Article based on Joukowski's transformation Some Theorems and Examples based on Critical mappings Numerical Problems related to Exponential, Logarithmic, Trigonometric and Joukowski's transformations Assignments: Test of "Elementary Functions and Mobius Transformations"</p>
May 15 – May 19	Revision and Class test

MR


Principal
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LESSON PLAN (2022-23)

Name of Teacher – Ms. Meena

Paper – Business Mathematics

Class – B.Com 1st

Subject: - Mathematics

Session:- 2022-2023 (Even Sem.)

Weeks With Months	Contents
Jan 31 – Feb 4	Previous Year Question Papers and Exam Pattern was discussed
Feb 6- Feb 11	Permutations
Feb 13 - Feb 17	Combinations
Feb 20 – Feb 25	Binomial Theorem
Feb 27- March 04	Assignments: Presentation and Problem Solving of Chapter 1 & 2
March 06 - March 11	Linear inequalities: graphical solution of linear equalities in two variables, solution of system of linear inequalities in two variables
March 13 – March 18	Linear programming-formulation of equation: graphical method of solution; problems relating to two variables including the case of mixed constraints; cases having no solution, multiple solutions, unbounded solution and redundant constraints
March 20 - March 25	Assignments: Presentation and Problem Solving of Chapter 3 & 4
March 27 - April 01	Data representation and interpretation: introduction and classification
April 03 – April 08	Tabulation of data, Diagrammatic and graphic representation of data: significance of diagrams and graphs
April 10 - April 15	Assignments: Presentation and Problem Solving of Chapter 5
April 17 - April 22	Types of diagrams: bar diagram, pie chart, pictographs, graphs of time series or line graphs
April 24 - April 29	Types of diagrams: Graphs of frequency distribution: histogram, frequency polygon, ogives or cumulative frequency curves, limitations of diagrams and graphs.
May 01 - May 06	Assignments: Presentation and Problem Solving of Chapter 6, 7 & 8.
May 08 - May 13	Revision and Tests
May 15 – May 19	Revision and Tests

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LESSON PLAN (2022- 2023)

Name of Teacher – Ms. Meena

Subject: - Mathematics

Paper – Sequences and Series

Class – BA/BSC 2nd year

Session:- 2022-2023 (IV Sem.)

Weeks With Months	Contents
Jan 31 - Feb 4	Previous Question Paper and Exam Pattern was discussed
Feb 6- Feb 11	Boundedness of the set of real numbers; least upper bound, greatest lower bound of a set, neighbourhoods, interior points, isolated points, limit points, open sets, closed set Interior of a set, closure of a set in real numbers and their properties
Feb 13 - Feb17	Open covers, Compact sets, Bolzano-Weiestrass theorem Assignment: Numerical problems based on Bolzano-Weiestrass theorem.
Feb 20 - Feb 25	Heine-Borel Theorem and Numerical problems based on it. Revision of Section-I through Assignments and Tests
Feb 27- March 04	Sequence: Real Sequences and their convergence, Theorem on limits of sequence, Bounded and monotonic sequences, Assignments: To construct examples of Real Sequences and check their convergence
March 06 - March 11	Cauchy's sequence, Cauchy general principle of convergence, Subsequences, Subsequential limits. Revision through Assignments and Tests
March 13 - March 18	Infinite series: Convergence and divergence of Infinite Series, Comparison Tests of positive terms Infinite series, Cauchy's general principle of Convergence of series. Assignments: Numerical problems related to Convergence and divergence of Infinite Series
March 20 - March 25	Convergence and divergence of geometric series, Hyper Harmonic series or p-series., Raabe's test, Logarithmic test, de Morgan and Bertrand's test.
March 27 - April 01	D-Alembert's ratio test and Cauchy's nth root test. Assignments: Proof of theorems on D-Alembert's ratio test and Cauchy's n th root test
April 03 - April 08	Infinite series: Gauss Test, Cauchy's integral test, Cauchy's condensation test. Assignments: Application of Gauss Test to given positive term series
April 10 - April 15	Alternating series, Leibnitz's test, absolute and conditional convergence Assignments: Presentation of Chapter 6 - Arbitrary Series
April 17 - April 22	Arbitrary series: abel's lemma, Abel's test, Dirichlet's test Assignments: Recognition of Different kinds of series previously taught in the class
April 24 - April 29	Insertion and removal of parenthesis, rearrangement of terms in a series, Dirichlet's theorem, Riemann's Re-arrangement theorem, Pringsheim's theorem (statement only)
May 01 - May 06	Multiplication of series, Cauchy product of series, (definitions and examples only) Convergence and absolute convergence of infinite products.
May 08 - May 13	Revision and Test of Section I & II
May 15 - May 19	Revision and Test of Section III & IV

Ms. Meena