LESSON PLAN (Jan-May 2024)

Name of Teacher – Dr Nishu Gupta **Subject: - Mathematics**
Paper – Algebra and Number Theory
Class – BA/BSC 2nd Sem **Session: - 2023-2024 (Even Sem.)**

Weeks With Months	Contents
31 Jan-3 Feb	Symmetric, Skew symmetric, Hermitian and skew Hermitian matrices, Elementary operations on matrices
Feb. 5-10	Rank of a matrix,Inverse of a matrix, Linear dependence and independence of rows and columns of matrix, Row rank and column rank of a matrix
Feb. 12-17	Eigen values, Eigen vectors and characteristic equation of a matrix, Minimal polynomial of a matrix
Feb. 19-23	Cayley-Hamiltontheorem and its use in finding the inverse of a matrix, Unitary and orthogonal matrices.
Feb. 26- March 2	Relations between the roots and coefficients of general polynomial equation in one variable
March 4-9	Solutions of polynomialequations having conditions on roots,
March 11-16	Common roots andmultiple roots, Transformation of equations
March 18-22	Nature of the rootsof an equation, Descarte's rule of signs.
March 23-27	Vacations
March 28-30	Solutions of cubic equations (Cardon's method), Biquadratic equations and their solutions.
April 1-6	Divisibility, Greatest common divisor (gcd),
April 8-12	Least commonmultiple (lcm), Prime numbers
April 15-20	Fundamental theorem ofarithmetic.
April 22-27	Linear congruences, Fermat's theorem
April 29- May 4	Euler's theorem,Wilson's theorem and its converse
May 6-11	Chinese Remaindertheorem, Linear Diophantine equations in two variables.
May 13-15	Revision

LESSON PLAN (Jan-May 2024)

Name of Teacher – Dr Nishu Gupta Subject: - Mathematics
Paper – Business Mathematics
Class – BCOM 2nd Sem Session: - 2023-2024 (Even Sem.)

Weeks With Months	Contents
31 Jan-3 Feb	Differentiation; derivative of simple functions and other functions (excluding trigonometric functions) having applications in business studies;
Feb. 5-10	Differentiation; derivative of simple functions and other functions (excluding trigonometric functions) having applications in business studies;
Feb. 12-17	Maxima and minima ofRevenue, Cost
Feb. 19-23	Demand, Production, Profit functions and other functions related to business and commerce.
Feb. 26- March 2	Integration: Definite and indefinite (simple functions excludingtrigonometric functions),
March 4-9	basic rules of integration
March 11-16	Applicationof integration in commercial and business problems.
March 18-22	Applicationof integration in commercial and business problems.
March 23-27	Vacations
March 28-30	Binomial Theorem
April 1-6	Permutations and Combinations.
April 8-12	Permutations and Combinations.
April 15-20	Linear programming
April 22-27	Formulation of linear programmingproblems (LPP) and their solution by graphical and simplex methods,
April 29- May 4	Applications of linear programming in solvingproblems related to business and commerce.
May 6-11	Applications of linear programming in solvingproblems related to business and commerce.
May 13-15	Revision

LESSON PLAN (Jan- May 2024)

Name of Teacher – Dr Nishu Gupta **Subject: - Mathematics**

Paper – Dynamics

Class – BA/BSC 3rd **Session:- 2023-2024 (Even Sem.)**

Weeks With Months	Contents
Jan. 23-27	Velocity and acceleration along radial and transverse velocity
Jan. 29-31	Examples and Exercise
Feb. 1-3	Acceleration along tangent and normal directions
Feb. 5-10	Relative velocity and acceleration
Feb. 12-17	Simple Harmonic motion Examples and Exercise
Feb. 19-23	Elastic Strings Examples and Exercise
Feb. 26-29	Mass, Momentum and Force Examples and Exercise
March 1-2	Newton laws of motion Examples and Exercise
March 4-9	Work, Power and Energy Examples and Exercise
March 11-16	Definition of Conservative forces Examples and Exercise
March 18-22	Impulsive forces Examples and Exercise
March 23-27	Vacations
March 28-30	Impulsive forces Examples and Exercise
April 1-6	Motion on smooth and rough plane curves Examples and Exercise
April 8-12	Motion on smooth and rough plane curves Examples and Exercise
April 15-20	Projectile motion of a particle in a plane Examples and Exercise
April 22-27	Vector angular velocity
April 29-30	General motion of a rigid body Examples and Exercise
May 1-4	Central Orbits, Kepler s laws of motion, Motion of a particle in three dimension
May 6-11	Acceleration in terms of different coordinate systems Examples and Exercise
May 13-15	Revision and class test

LESSON PLAN (Jan- May 2024)

Name of Teacher – Dr Nishu Gupta **Subject:-Mathematics**

Paper – Programming in C & Numerical Methods

Class – BA/BSC 2nd **Session:- 2023-2024 (Even Sem.)**

Weeks With Months	Contents
Jan. 23-27	Programmer's model of a computer, Algorithms, Flow charts
Jan. 29-31	Data types, Operators and expressions
Feb. 1-3	Input / outputs functions.
Feb. 5-10	Practice of making Basic programs of C language
Feb. 12-17	Decisions control structure: Decision statements
Feb. 19-23	Logical and conditional statements, Implementation of Loop
Feb. 26-29	Switch Statement & Case control structures.
March 1-2	Functions, Preprocessors and Arrays
March 4-9	Strings: Character Data Type, Standard String handling Functions, Arithmetic Operations on Characters.
March 11-16	Structures: Definition, using Structures, use of Structures in Arrays and Arrays in Structures.
March 18-22	Pointers: Pointers Data type, Pointers and Arrays, Pointers and Functions
March 23-27	Vacations
March 28-30	Solution of Algebraic and Transcendental equations: Bisection method, Regula-Falsi method
April 1-6	,Secant method, Newton-Raphson's method
April 8-12	Newton's iterative method for finding pth root of a number, Order of convergence of above methods.
April 15-20	Simultaneous linear algebraic equations: Gauss-elimination method, Gauss-Jordan method
April 22-27	Triangularization method (LU decomposition method). Crout's method
April 29-30	Cholesky Decomposition method.
May 1-4	Iterative method, Jacobi's method
May 6-11	Gauss-Seidal's method, Relaxation method.
May 13-15	Revision and Test

LESSON PLAN (Jan- May 2024)

Name of Teacher – Ms Meena **Subject: - Mathematics**

Paper – Special Function and Integral Transforms

Class – BA/BSC 3rd **Session:- 2023-2024 (Even Sem.)**

Weeks With Months	Contents
Jan. 23-27	Series solution of differential equations – Power series method, Definitions of Beta and Gamma functions. Bessel equation and its solution
Jan. 29-31	Bessel functions and their properties Convergence
Feb. 1-3	Recurrence, Relations and generating functions
Feb. 5-10	Orthogonality of Bessel functions , Revision and Test
Feb. 12-17	Legendre and Hermite differentials equations and their solutions: Legendre and Hermite functions and their properties
Feb. 19-23	Recurrence Relations and generating functions. Orhogonality of Legendre and Hermite polynomials
Feb. 26-29	Rodrigues' Formula for Legendre & Hermite Polynomials
March 1-2	Revision and Test
March 4-9	Laplace Integral Representation of Legendre polynomial, Test
March 11-16	Laplace Transforms – Existence theorem for Laplace transforms, Linearity of the Laplace transforms, Shifting theorems,
March 18-22	Laplace transforms of derivatives and integrals
March 23-27	Differentiation and integration of Laplace transforms
March 28-30	Convolution theorem, test
April 1-6	Inverse Laplace transforms, convolution theorem
April 8-12	Inverse Laplace transforms of derivatives and integrals, solution of ordinary differential equations using Laplace transform
April 15-20	Fourier transforms: Linearity property, Shifting, Modulation, Convolution Theorem
April 22-27	Fourier Transform of Derivatives, Relations between Fourier transform and Laplace transform
April 29-30	Parseval's identity for Fourier transforms
May 1-4	Solution of differential Equations using Fourier Transforms, Revision and Test of Unit 1,2
May 6-11	Revision and Test of Unit 3,4
May 13-15	Revision and Test

Meena
06/02/2024

Principal
Govt. College

LESSON PLAN (Jan- May 2024)

Name of Teacher – Ms Meena **Subject: - Mathematics**

Paper – Linear Algebra

Class – BA/BSC 3rd

Session:- 2023-2024 (Even Sem.)

Weeks With Months	Contents
Jan. 23-27	Vector spaces, subspaces, Sum and Direct sum of subspaces, Linear span, Linearly Independent and dependent subsets of a vector space
Jan. 29-31	Finitely generated vector space
Feb. 1-3	Existence theorem for basis of a finitely generated vector space
Feb. 5-10	Finite dimensional vector spaces, Invariance of the number of elements of bases sets , Test
Feb. 12-17	Dimensions, Quotient space and its dimension
Feb. 19-23	Homomorphism and isomorphism of vector spaces,
Feb. 26-29	Linear transformations and linear forms on vector spaces
March 1-2	Vector space of all the linear transformations Dual Spaces, Bidual spaces
March 4-9	Annihilator of subspaces of finite dimentional vector spaces
March 11-16	Null Space, Range space of a linear transformation
March 18-22	Rank and Nullity Theorem, Assignment and Test
March 23-27	Algebra of Liner Transformation, Minimal Polynomial of a linear transformation
March 28-30	Singular and non-singular linear transformations
April 1-6	Matrix of a linear Transformation, Change of basis, Eigen values
April 8-12	Eigen vectors of linear transformations
April 15-20	Inner product spaces, Cauchy-Schwarz inequality, Orthogonal vectors
April 22-27	Orthogonal complements, Orthogonal sets and Basis, Bessel's inequality for finite dimensional vector spaces
April 29-30	Test and doubts of Orthogonal complements, Orthogonal sets and Basis, Bessel's inequality for finite dimensional vector spaces
May 1-4	Gram-Schmidt, Orthogonalization process, Adjoint of a linear transformation and its properties
May 6-11	Unitary linear transformations
May 13-15	Revision and Test

Principal 6/2/24

LESSON PLAN (Jan- May 2024)

Name of Teacher – Ms Meena **Subject: - Mathematics**

Paper – Mathematics for Commerce and Social Sciences (MDC)

Class – BA/BSC 3rd **Session:- 2023-2024 (Even Sem.)**

Weeks With Months	Contents
Feb. 8-10	Definition of a matrix, Order, Equality, Types of matrices, Operations on matrices: addition, multiplication and multiplication with a scalar and their simple properties.
Feb. 15-17	Minors, Co-factors, Determinant, Properties of determinants
Feb. 22-23	applications of determinants in finding the area of a triangle, Adjoint and inverse of a square matrix, Solutions of simultaneous linear equations.
Feb. 29	Differentiation (Basic formulas)
March 1-2	Derivatives of simple functions and other functions having applications in business and social studies
March 7-9	Maxima and minima of a function and their applications to Revenue, Cost, Demand, Production, Profit functions and other functions related to commercial and social Problems.
March 14-16	Doubts related to Maxima and minima of a function and their applications to Revenue, Cost, Demand, Production, Profit functions and other functions related to commercial and social Problems and assignment
March 21-23	Integration of simple functions and its applications in commercial and economic problems
March 28-30	Simple interest and compound interest and Test
April 4-6	Annuities: Types of annuities, Present value and amount of an annuity (including the case of continuous compounding),
April 11-13	Valuation of simple loans and debentures,
April 18-20	Problems related to sinking funds, Assignment
April 25-27	Linear Programming: Formulation of linear programming problems (LPP) and their solution by graphical and Simplex methods
May 2-4	Applications of linear programming in solving social science and business problems.
May 9-11	Revision and Test

Meena
06/02/24

Principal
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Indara (Hindi)

LESSON PLAN (Jan- May 2024)

Name of Teacher – Ms Meena **Subject: - Mathematics**

Paper – Sequence and Series

Class – BA/BSC 3rd **Session:- 2023-2024 (Even Sem.)**

Weeks With Months	Contents
Jan. 23-27	Previous Question Paper and Exam Pattern was discussed Boundedness of the set of real numbers; least upper bound, greatest lower bound of a set
Jan. 29-31	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. 1-3	Open covers, Compact sets, Bolzano-Weiestrass theorem Assignment:Numerical problems based on Bolzano-Weiestrass theorem.
Feb. 5-10	Heine-Borel Theorem and Numerical problems based on it.
Feb. 12-17	Revision of Unit-I through Assignments and Tests Sequence: Real Sequences and their convergence,
Feb. 19-23	Theorem on limits of sequence, Bounded and monotonic sequences, Assignments:To construct examples of Real Sequences and check their convergence
Feb. 26-29	Cauchy's sequence, Cauchy general principle of convergence, Subsequences, Subsequential limits. Revision through Assignments and Tests
March 1-2	Infinite series: Convergence and divergence of Infinite Series, Comparison Tests of positive terms Infinite series
March 4-9	Cauchy's general principle of Convergence of series.
March 11-16	Convergence and divergence of geometric series, Hyper Harmonic series or p-series
March 18-22	Raabe's test, Logarithmic test, de Morgan and Bertrand's test
March 23-27	D-Alembert's ratio test and Cauchy's nth root test. Test : Proof of theorems on D-Alembert's ratio test and Cauchy's n^{th} root test
March 28-30	Assignments: Application of Gauss Test to given positive term series
April 1-6	Infinite series: Gauss Test, Cauchy's integral test, Cauchy's condensation test
April 8-12	Alternating series, Leibnitz's test, absolute and conditional convergence, Presentation of Chapter 6 - Arbitrary Series
April 15-20	Arbitrary series: abel's lemma, Abel's test, Dirichlet's test Assignments: Recognition of Different kinds of series previously taught in the class
April 22-27	Insertion and removal of parenthesis, rearrangement of terms in a series, Dirichlet's theorem,
April 29-30	Riemann's Re-arrangement theorem, Pringsheim's theorem (statement only)
May 1-4	Multiplication of series, Cauchy product of series, (definitions and examples only) Convergence of infinite products

May 6-11	Absolute convergence of infinite products, Revision and Test of Section I & II
May 13-15	Revision and Test of Section III & IV

06/02/24.

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