NAME: Dr. Neelam Sharma

Class:(LINEAR ALGEBRA )B. A and B.SC III

DEPARTMENT: MATHEMATICS

| MONTH | 1ST WEEK | 2ND WEEK | 3RD WEEK | 4TH WEEK |
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| April | VECTOR SPACES, SUBSPACES, SUM AND DIRECT SUM OF SUBSPACES, LINEAR SPAN | LINEARLY INDEPENDENT AND DEPENDENT SUBSETS OF A VECTOR SPACE. FINITELY GENERATED VECTOR SPACE, | EXISTENCE THEOREM FOR BASIS OF A FINITELY GENERATED VACTOR SPACE, FINITE DIMENSIONAL VECTOR SPACES, | INVARIANCE OF THE NUMBER OF ELEMENTS OF BASES SETS, DIMENSIONS, QUOTIENT SPACE AND ITS DIMENSION TEST AND ASSIGNMENT |
| May | HOMOMORPHISM AND ISOMORPHISM OF VECTOR SPACES, LINEAR TRANSFORMATIONS AND LINEAR FORMS ON VACTOR SPAC<br><br>ALGEBRA OF LINER TRANSFORMATION, | VACTOR SPACE OF ALL THE LINEAR TRANSFORMATIONS DUAL SPACES, BIDUAL SPACES, | ANNIHILATOR OF SUBSPACES OF FINITE DIMENTIONAL VACTOR SPACES, NULL SPACE | RANGE SPACE OF A LINEAR TRANSFORMATION, RANK AND NULLITY THEOREM, TEST AND ASSIGNMENT |
| June | INNER PRODUCT SPACES, CAUCHY-SCHWARZ INEQUALITY, ORTHOGONAL VECTORS | ORTHOGONAL COMPLEMENTS, ORTHOGONAL SETS AND BASIS, BESSEL'S INEQUALITY FOR FINITE DIMENSIONAL VECTOR SPACES | GRAM- SCHMIDT, ORTHOGONALIZATION PROCESS, ADJOINT OF A LINEAR TRANSFORMATION AND ITS PROPERTIES, | UNITARY LINEAR TRANSFORMATIONS. TEST AND ASSIGNMENT |

Neelam Sharma
18/05/2022

Name- Dr. Neelam Sharma (Mathematics)

Class- BSc. I + B.A I (Even Semester)

Paper- Number Theory and Trigonometry

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| Week 1 | Divisibility, G.C.D.(greatest common divisors), , L.C.M.(least common multiple) |
| Week 2 | Primes, Fundamental Theorem of Arithemetic. Linear Congruences, Examples |
| Week 3 | Linear Diophanatine equations in two variables, Fermat's theorem. Wilson's theorem and its converse.Class Test |
| Week 4 | Chinese Remainder Theorem, Complete residue system and reduced residue system modulo m. Euler's ø function Euler's generalization of Fermat's theorem. |
| Week 5 | Quadratic residues. Legendre symbols. Lemma of Gauss; Gauss reciprocity law. Greatest integer function [x]. The number of (n)). Mobius σ divisors and the sum of divisors of a natural number n (The functions d(n) and function and Assignment 1 . |
| Week 6 | Mobius inversion formula. De Moivre's Theorem and its Applications |
| Week 7 | De Moivre's Theorem Applications, Circular Functions of a Complex variables. |
| Week 8 | Expansion of trigonometrical functions. Direct circular and hyperbolic functions and their properties.Class Test |
| Week 9 | Logarithm of a complex quantity. Inverse circular and hyperbolic functions and their properties. |
| Week 10 | Gregory's series. Summation of Trigonometry series. |
| Week 11 | Summation of Trigonometry series. Assignment. |
| Week 12 | Class Test & Revision |
| Week 13 | Revision |
| Week 14 | Revision |
| Week 15 | Full Syllabus Test |
| Week 16 | |

Neelam Sharma
18/05/2022

Name : Dr. Neelam Sharma ( Mathematics )

Class :BSc. II + BA II( Even Semester)

Paper : Special Functions and Integral Transforms

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| Week 1 | Series solution of differential equations – Power series method |
| Week 2 | Power series method,Examples, Definitions of Beta and Gamma functions. |
| Week 3 | Examples Related to Beta and Gamma functions, Bessel functions and their properties-Convergence, recurrence, Relations and generating functions, Orthogonality of Bessel functions. |
| Week 4 | Legendre differentials equations and their solutions: Legendre functions and their properties-Recurrence Relations and generating functions. Orhogonality of Legendre polynomials. Rodrigues' Formula for Legendre Polynomials, Laplace Integral Representation of Legendre polynomial. Class Test |
| Week 5 | Hermite differentials equations and their solutions,Hermite functions and their properties-Recurrence Relations and generating functions. Orhogonality of Hermite polynomials. Rodrigues' Formula for Hermite Polynomials, Examples. Assignment1. |
| Week 6 | Laplace Transforms – Existence theorem for Laplace transforms, Linearity of the Laplace transforms, Shifting theorems, Laplace transforms of derivatives and integrals. |
| Week 7 | Differentiation and integration of Laplace transforms, Convolution theorem, Inverse Laplace transforms, convolution theorem, Inverse Laplace transforms of derivatives and integrals, solution of ordinary differential equations using Laplace transform.Class Test. |
| Week 8 | Fourier transforms: Linearity property, Shifting, Modulation, Convolution Theorem, Related Examples, Assignment. |
| Week 9 | Fourier Transform of Derivatives, Relations between Fourier transform and Laplace transform, Parseval's identity for Fourier transforms, Examples |
| Week 10 | Solution of differential Equations using Fourier Transforms, Examples. |
| Week 11 | Test & Revision |
| Week 12 | Revision |
| Week 13 | Revision |
| Week 14 | Revision |
| Week 15 | Full Syllabus Test. |
| Week 16 | Doubt Class. |

Neelam Sharma
18/05/2022

Name: Dr. Neelam Sharma (Mathematics)

Class: B.A.- II+ BSc II (Even Semester)

Paper: Programming in C and Numerical Methods

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| Week 1 | Programmer's model of a computer, Algorithms, Flow charts |
| Week 2 | Data types, Operators and expressions, Input / outputs functions. |
| Week 3 | Decisions control structure: Decision statements, Logical and conditional statements, Implementation of Loops. |
| Week 4 | Switch Statement & Case control structures. Functions, Preprocessors and Arrays. Assignment 1 |
| Week 5 | Strings: Character Data Type, Standard String handling Functions, Arithmetic Operations on Characters. Structures: Definition, using Structures, use of Structures in Arrays and Arrays in Structures. |
| Week 6 | Pointers Data type, Pointers and Arrays, Pointers and Functions. Solution of Algebraic and Transcendental equations by Bisection method.Assignment and Class test . |
| Week 7 | Regula-Falsi method, Secant method, Newton-Raphson's method. Newton's iterative method for finding pth root of a number, Order of convergence of above methods. |
| Week 8 | Simultaneous linear algebraic equations: Gauss-elimination method, Gauss-Jordan method, Triangularization method (LU decomposition method). Crout's method. |
| Week 9 | Cholesky Decomposition method. Iterative method, Jacobi's method, Gauss-Seidal's method, Relaxation method and Related Problems. |
| Week 10 | Revision |
| Week 11 | Revision and Class Test |
| Week 12 | Doubt Class, Full syllabus test. |

Name: Dr. Neelam Sharma

Class- B.com 4th sem ( Even Semester)

Paper- Business Statistics

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| April | Theory of probability<br>Test and Assignment<br>Binomial Distribution |
| May | Poisson Distribution<br>Test and Assignment<br>Index Numbers<br>Test and Assignment |
| June | Analysis of time series<br>Test and Assignment |

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