

Session - 2023-24

B-Com - I
IInd Semester
BUSINESS MATHEMATICS

(ASHU BALA
Extension Lecturer
Maths Dept)

Feb February:-

Differentiation:- derivative of simple functions and other functions having applications in business studies; maxima and minima of Revenue, Cost, Demand, Production, Profit functions and other functions related to business and commerce.

March:-

Integration:- definite and indefinite; basic rules of integration; application of integration in commercial and business problems.

April:-

Permutation and Combinations:- Factorial Notation, Difference between permutation and combination, permutation - restricted permutations, permutation with repetitions, permutation of objects not all different, combination, practical problems on combinations. Binomial theorem.

May:-

Linear Programming:- Formulation of linear programming problems and their solution by graphical and simplex methods, Application of Linear Programming in solving problems related to business and commerce.

2023-2024

M.Sc (FINAL)

IVth Semester

(MATHEMATICAL ASPECTS
of SEISMOLOGY)

(ASHUBALA
Extension student
maths Dept)

January:

General form of Progressive waves, Harmonic waves, Plane waves, the wave equation, Principle of superposition, Special types of solutions: - Progressive and stationary type solutions of wave equation. Equation of telegraphy, Exponential form of harmonic waves, D'Alembert's formula, Inhomogeneous wave equation. Dispersion: - Group velocity, Relation between phase velocity and group velocity.

February:

Reduction of equation of motion to wave eqⁿ, P and S waves and their characteristics, Polarisation of Plane P and S waves. Snell's law of reflection and refraction, Reflection of Plane P and SV waves at a free surface. Partition of reflected energy, Reflection at critical angles. Reflection and refraction of Plane P, SV and SH waves at an interface. Special cases of Liquid-Liquid interface, Liquid-Solid interface and Solid-Solid interface.

March:

Rayleigh waves, Love waves and Stonely waves. Two dimensional Lamb's Problems in an isotropic elastic solid: Area sources and line sources in a unlimited elastic solid, Area source and Point source on the surface of semi infinite elastic solid. Haskell matrix method for Love waves in multilayered medium.

April:

Spherical waves. Expansion of a spherical wave into Plane waves. Sommerfeld's integral. Kirchhoff's solution of the wave equation. Poisson's formula. Helmholtz's formula.

Introduction to seismology: location of earthquakes, Aftershocks and foreshocks, earthquake magnitude, seismic moment, Energy released by earthquakes, observation of earthquakes, interior of the earth.

2023-2024

B.Sc - II

IVth Semester

(SPECIAL FUNCTIONS AND
INTEGRAL TRANSFORMS)

(ASHU BALA)

Extended
Maths Dept

January: -

Power series:- convergence of Power series, operation on Power series, Shifting of summation Index, Analytic function, Ordinary and singular points of Differential equations, Power series method, Definition of Beta and Gamma functions, Bessel equation and its solution: Bessel functions and their properties:- convergence, Recurrence relations and generating functions, orthogonality of Bessel functions.

February: -

Legendre and Hermite differential equations and their solutions: Legendre and Hermite's functions and their properties, Recurrence relations and generating functions, orthogonality of Legendre and Hermite's Polynomials, Rodrigues formula for Legendre and Hermite Polynomials, Laplace Integral Representation of Legendre Polynomials.

March: -

Laplace Transforms:- Existence theorem for Laplace transform, Linearity of the Laplace transforms, Shifting theorem, Laplace transforms of derivatives and integrals, Differentiation and integration of Laplace transforms, Convolution theorem, Inverse Laplace transforms, Inverse Laplace transforms of derivatives and integrals, Solution of ordinary differential equations using Laplace transform.

April:

Fourier transforms:- Linearity Property, Shifting, Modulation, Convolution theorem, Fourier transform and Laplace transform, Parseval's identity for Fourier transforms, Solution of differential equations using Fourier transforms.