

Name of Assistant Professor: - Mr. Himanshu (Asstt. Prof. Mathematics)

Class: - B.Sc. N.M/ B.A. (3rd Sem.)

Subject: - Differential Equations-I

Week	Topic
July/Fourth	Basic Concepts of Ordinary differential equations. Order and degree of ODE. Solution of D.E. of first order and first degree.
Aug./First	Solution of D.E. of first order and first degree. Exact differential equation.
Aug./Second	First order and higher degree equations solvable for x, y and p.
Aug./Second	Lagrange Equations, Clairaut's form and singular solutions. Orthogonal Trajectories
Aug./Third	Solution of Linear DE with constant coefficients.
Aug./ Fourth	Sol of Non- linear DE with constant coefficients.
Sept./ First	Linear DE of second order with variable coefficients.
Sept./ Second	Method of undetermined coefficients.
Sept./ Third	Method of Variation of parameters, Cauchy Euler Equations.
Sept. Fourth	Sol. Of simultaneous differential equations, Total diff. equations.
Oct./ First	Introduction to PDE, Concept of linear, nonlinear PDE, Complete Solution, General Solution and Singular solution.
Oct./Second	PDE of first degree and Lagrange's method to solve.
Oct./ Third	Compatible system of first order PDE
Oct. Fourth	Charpit's Method, Special type of first order PDE's
Nov./ First	Jacobi's Method. Second order PDE with constant coefficient
Nov. / Second	Second order PDE with constant coefficient
Nov./ Third	Revision and Problems
Nov./ Fourth	Examination

Name of Assistant Professor: - Mr. Himanshu (Asstt. Prof. Mathematics)

Class: - M.Sc. Mathematics (P)

Subject: - Complex Analysis

Week	Topic
Aug./First	Power Series its convergence, Radius of Convergence.
Aug./Second	Examples of Power Series, Sum and product, differentiability of sum function of Power series.
Aug./Third	$\exp(z)$ and its properties, $\log(z)$
Aug./Fourth	Power of Complex number (z), their branches with analyticity.
Sept./First	Path in a region, smooth path, contour, simply connected region, multiply connected region, bounded variation, total variation.
Sept./Second	Complex Integration, Cauchy theorem for simply connected and multiply connected domains
Sept./Third	Cauchy integral formula. Extension of Cauchy integral formula for multiple connected domains. Higher order derivative of Cauchy integral formula. Gauss mean value theorem. Morera's theorem.
Sept./Fourth	Cauchy's inequality, zeros of an analytic function, entire function. Radius of convergence of entire function.
Oct./First	Liouville's theorem, Fundamental theorem of Algebra, Taylor's theorem
Oct./Second	Maximum modulus principle, Minimum modulus principle, Schwarz lemma
Oct./third	Singularities and their classification, pole of a function and its order. Laurent series.
Oct./Fourth	Weierstrass theorem, Meromorphic functions, poles and zeros of meromorphic functions. The augmented principle, Rouché's theorem, inverse function theorem.
Nov./First	Residue at a singularity, poles, infinity. Cauchy residue theorem and its use to calculate certain integrals. Definite integrals
Nov./third	Poles on real axis, integral of many valued function, Bilinear transformation their properties and classifications, cross ratio, preservation of cross ratio under B.T.
Nov./Fourth	Preservation of circle and straight line under bilinear transformation, fixed point bilinear transformation, normal form. Conformal mapping, critical points. Residue at a singularity, poles, infinity. Cauchy residue theorem and its use to calculate certain integrals. Definite integrals
Dec./First	Examination

Name of Assistant Professor: - Mr. Himanshu (Asstt. Prof. Mathematics)

Class: - B.B.A. First Sem.

Subject: - Business Mathematics

Week	Topic
July/Fourth	Introduction to Sets, their representation and type of sets. Complement of a set.
Aug./First	Subsets. Venn Diagrams, Intersection and Union of sets
Aug./Second	Practical application of sets.
Aug./Second	Introduction to Quadratic equations. Solution of quadratic equations.
Aug./Third	Relation between roots and coefficients. Methods of solving QE.
Aug./ Fourth	Methods of solving QE.
Sept./ First	Introduction to Binomial Theorem
Sept./ Second	General term, middle term and particular term using Binomial theorem.
Sept./ Third	Introduction to Matrices, their types.
Sept. Fourth	Operations on matrices.
Oct./ First	Transpose of a matrix, symmetric and skew symmetric matrices. Determinant of a matrix.
Oct./Second	Properties of determinants. Adjoint of a matrix.
Oct./ Third	Inverse of a matrix. Cramer Rule.
Oct. Fourth	Introduction to functions, types of functions.
Nov./ First	Limits of a function, algebra of limits, RHL and LHL
Nov. / Second	Continuity of a point.
Nov./ Third	Revision and Problems
Nov./ Fourth	Examination

Name of Assistant Professor: - Mr. Himanshu (Asstt. Prof. Mathematics)

Class: - B.Sc. N.M/ B.A. (3rd Sem.)

Subject: - Problem Solving & Practical's in Differential Equations using Maxima software

Week	Topic
July/Fourth	Problem solving for DE which are reducible to homogenous.
Aug./First	Problem solving for DE which are exact DE. Solution of first and second DE.
Aug./Second	Problem solving for linear DE with constant coefficient. Plotting of family of solution of DE of first, second and third order.
Aug/Second	Problem solving for linear DE with variable coefficient. Solution of DE using methods of variation of parameters.
Aug./Third	Problem solving for DE by method of variation of parameters. Problem solving for DE which are reducible to homogenous.
Aug./ Fourth	Problem solving for DE by method of undermined coefficient.
Sept./ First	Growth and decay model (Exponential case only)
Sept./ Second	Lake pollution model
Sept./ Third	Problem solving for simultaneous DE.
Sept. Fourth	Density dependent growth model.
Oct./ First	Problem solving for different PDE using lagranges model.
Oct./Second	To find the solution of linear DE of second order using built in function of maxima software.
Oct./ Third	Problems solving for PDE with charpit method.
Oct. Fourth	To find numerical solution of first order ODE using plotdf built in function of maxima.
Nov./ First	Problem solving for PDE with Jacobi method.
Nov. / Second	To find exact solution of first and second order ODE using dissolve and atvalue built in function of maxima.
Nov./ Third	To find the exact solution of first and second order ODE using ODE2 and IC1/IC2 built in function of Maxima
Nov./ Fourth	Examination