B.A/B.Sc IInd year 4th semester

Special functions and Integral Transforms

(SANGEETA GOYAL)

1st week Laplace Transforms, Linearity of the Laplace transforms, shifting theorem.

2nd week Laplace Tranforms of derivatives and Integral Differentiation and Integration of L.T.

3rd week convolution Theorem, Inverse L.T., Inverse L.T of derivatives and Integrals.

4th week Solution of ordinary differential equations using L.T, Revision and Test.

5th week Power Series solution of differential eq.

6th week Power Series solution, Revision, Test

7th week Bessel equation and its solution

8th week Recurrence relation and generating functions orthogonality of Bessel functions.

9th week Legendre and Hermite's function and their properties. Recurrence relations and generating functions.

10th week orthogonality of legendre and Hermite's Polynomials. Rodrigue's Formula for L. and H. Polynomials.

11th week Laplace Integral Representation of legendre Polynomials. Revision, Test

Special functions

12th week Fourier transforms linearity, Shifting Modulation., convolution Theorem,

13th week Fourier transform of derivatives, Relations between F.T and L.T, Parseval's identity for F.T. solution of differential equations using F.T.

14th week Revision

Seats

B.A / B.Sc Ist year 2nd Semester

Ordinary Differential Equations

Ist week meaning of a differential equation. Exact differential equation, Integrating factors

2nd week Questions based on I.F

3rd week First order higher degree equations solvable for x, y, p. (Test)

4th week Clairaut's equations. Equations reducible to Clairaut's form. Singular solutions.

5th week orthogonal trajectories in cartesian co-ordinate and Polar co-ordinates.

6th week self orthogonal family of curves. Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations. Equations reducible to homogeneous. (Test)

7th week Linear differential equations of second order.

8th week Reduction to normal form. Transformation of the equation by changing the dependent variable / independent variable. (Test)

9th week Solution by operators of non-homogeneous linear differential equations. Reduction of order of a differential equation. Method:

10th week Method of variations of Parameters. Method of undetermined coefficients.

11th week ordinary simultaneous differential equations

12th week Solution of simultaneous differential equations

13th week Total differential equations.

14th week revision

Geeta

B.A/B.Sc IInd Year 4th Semester

Programming in C and Numerical Methods

1st week Solution of algebraic and Transcendental equations. Bisection method. Regula-Falsi method

2nd week secant method, Newton Raphson's method Newton's iterative method for finding pth root of a number. test

3rd week order of convergence of above methods.

4th week Solution of simultaneous linear algebraic equations. Gauss-elimination method, Gauss-Jordan method

5th week Triangularization method, Crout's method,

6th week Cholesky decomposition method. Iterative method Jacobi's method, Gauss-seidel's method. Relaxation meth

7th week Programmer's model of a computer. Algorithms

8th week Flow chart, Data types, operators and expressions, Input and output functions.

9th week Decision control structure, Decision statement logical and conditional statements. test

10th week Implementation of loops, switch statement and case control structure, Functions, Preprocessors and Arrays.

11th week Strings, character data type, standard string handling functions, Arithmetic operations on characters

Structures: Defination,

12th week use of structure in arrays and arrays in structures.

13th week Pointers data type, Pointers and arrays. Pointers and functions.

14th week Revision.

Geeta