Government College ,Mahendergarh,Haryana,123029

Name of Assistant Professor: Dr.Vijaya Bai

Department of Mathematics

Class and Semester:B.Sc. Semester- 4 th

Session:2021-22

Subject:- Special Functions and Integral Transform

Lesson Plan:(21, March to 15 June 2022)

Week1 (21 to 26 March)Power series method, Definitions of Beta and Gamma functions,
Week2 (28 to 31 March) Bessel equation and its solution: Bessel functions and their properties - Convergence

Week3 (1 to 2 April) Recurrence relations and generating functions

Week4 (4 to 9 April) Orthogonality of Bessel Function

Week5 (11 to 16 April)Legendre and Hermite differential equations and their solutions: Legendre and Hermite's functions and their properties,

Week6 (18 to 23 April) Recurrence relations and generating functions. Orthogonality of Legendre and Hermite's polynomials,
Week7 (25 to 30 April) Rodrigues Formula for Legendre and Hermite Polynomials, Laplace Integral Representation of Legendre polynomial.
Week8 (2 May to 7 May)Laplace Transforms: Existence theorem for Laplace transform, Linearity of the Laplace transforms,
Week9 (9 to 14 May) Shifting theorems, Laplace transforms of derivatives and integrals, Differentiation and integration of Laplace transforms, Convolution theorem.
Week10 (16 to 21 May) Inverse Laplace transforms, convolution theorem, Inverse Laplace transforms of derivatives and integrals,
Week11 (23 to 28 May) Solution of ordinary differential equations using Laplace transform.
Week12 (30 to 31May) Fourier transforms: Linearity property, Shifting, Modulation
Week13 (1 to 4 June) Convolution theorem, Fourier transform of derivatives, Relations between Fourier transform and Laplace transform,
Week14 (6 to 11 June) Parseval's identity for Fourier transforms, Solution of differential equations using Fourier transforms
Week15 (13 to onwards) Test of the chapter and presentation.