Preface

This thesis is an attempt to study various scattering problems of Radiative Transfer. Solution of scattering problems have been obtained both exactly for the angular distribution of the emergent intensity and approximately for practical purpose. Numerical calculations have also been made for a few cases. The methods applied for the exact solutions are "Laplace-Transform and Wiener-Hopf technique" , " Laplace Transform and Linear singular operators " and "Principle of Invariance ". The methods used for the approximate solutions are Discrete Ordinate method and Eddington's approximations. The problems of scattering isotropically, anisotropically, coherently and noncoherently, both in finite and semi-infinite atmospheres, have been discussed. The problems with Rayleigh's scattering phase function, Combination of Rayleigh and Isotropically scattering phase function and Planetary phase function has been dealt and in most of the cases the planckian source function has been taken as an exponential function of optical depth.

Application of Wiener-Hopf technique to the Time Dependent X- and Y- functions has been dealt. An exact linearization and decoupling of the integral equation satisfied by Time-Dependent X- and Y- functions has been made. The principle of invariance is applied to derive the functional equations for Time-Dependent diffuse reflection and transmission function.

This thesis contains five chapters with computed results presented in the respective chapters.