PREFACE

The present dissertation entitled , "A study of Biorthogonal Polynomials in Special Function Theory" is the out come of the research work carried out by the author

The theory of special functions plays a basic and vital role in the formalism of mathematical physics. The properties of these functions can be expressed in terms of differential equations. Special functions a very fertile branch of research and thrust primarily in the direction of obtaining generating functions which are solutions of the problem.

The investigations in the present dissertation are spread over three chapter. The first chapter is introductory in the sense that it contains a brief history and definition. A brief survey of the work done by the other researcher is this field is also presented chronologically. This chapter is concluded with list of formulae.

In chapter 2 we have defined a pair of biorthogonal polynomials suggested by generalized Hermite Polynomials. Biorthogonal condition is also obtained. Generating functions and bilateral generating functions are obtained. Some particular cases are also discussed. Mixed and pure recurrence relations are also studied.

Chapter 3 is devoted to the study of different pair of biorthogonal polynomials suggested by Hermite polynomials, the Szego-Hermite polynomials and generalized Hermite polynomials. We have expressed these polynomial sets in double hypergeometric functions. Some particular cases are also shown.

Each chapter is subdivided into sections which are numbered consecutively. A triple numbering system is used for all results. For example (2.4.9) is the 9th equation in the section 4 of chapter 2. The references are given at the end and they are arranged in alphabetical order. In the text, they have been referred to by putting with in rectangular brackets. For example. [18, p.36] means the page 36 of 18th reference given at the end of the dissertation.