P R E F A C E

Having been inspired by the tremendous utility and remarkably wide applications of the classical orthogonal polynomials in different branches of Applied Mathematics and and other Scientific disciplines, the research workers in the field of Special Functions have introduced into analysis several extensions and generalizations of the classical polynomials with a view to giving a unified treatment to their study. Such extensions, besides unifying the study of their particular cases also, at times, provide interesting and new insight into their study. My work in the present thesis entitled 'ON SOME GENERALIZATIONS OF CLASSICAL POLYNOMIALS' is also in the direction of introducing a new and useful extension of the classical polynomials and their various existing generalizations.

There are eight Chapters in this thesis. Chapter I is of introductory nature embodying some recent developments related to the various generalizations of the classical polynomials. The contents of the remaining seven Chapters constituting my main study may also be found in my following research papers, most of which have already appeared in Indian as well as foreign journals :

1. On a Unification of the generalized Humbert and Laguerre polynomials, Jñānābha (Prof. Arthur Erdélyi Memorial Volume), 9/10 (1980), 171-178.

2. On an extension of an inverse series relation, Bull. Inst.Math.Acad.Sinica, 10 (1982), 171-175.

3. On a new series transform and its convolution, Indian J. pure appl. Math., 14(11)(1983), 1348-1351.

4. On an inversion formula, Indian J. pure appl.Math., 13 (8) (1982), 907-911.

5. Biorthogonal polynomials associated with Jacobi weight function, Presented at the 76th Annual Session of Indian Science Congress, Tirupati, 1982 (communicated).

6. Expansion Formulas for a class of polynomials, J.M.S.Univ. Baroda,Vol.XXX, Science No.3(1981) (to appear).

7. An Expansion Formula, J.M.S.Univ. Baroda,Vol.XXXI, Science, Technology and Medicine (1982) (to appear).

8. Products of several generalized Laguerre polynomials, Presented at the 46th Annual Conference of I M S at Bangalore.(Communicated).

9. A Characterization of generalized polynomial sets. (Communicated).

10. Generating Functions for a new class of polynomials. (Communicated).

The subject matter of this thesis is based on the results of my research work carried on by me (since July 1979) under the able guidance and kind supervision of Dr. J. P. Singhal, Reader in Mathematics, M. S. University of Baroda, Baroda. I owe a sense of deep gratitude and indebtedness to Dr. Singhal for his constant inspiration, invaluable guidance and ungrudging help during the entire period of my association with him as his research student.

Being a student of the Department of Mathematics, of M. S. University, Baroda,right from B.Sc., I have been

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(SAVITA KUMARI)