

PREFACE

The present thesis entitled 'EXTENSIONS OF CERTAIN INVERSE SERIES RELATIONS AND ASSOCIATED POLYNOMIALS' incorporates the investigations carried out by me under the able guidance of Dr. J.P. Singhal, Professor and former Head, Department of Mathematics, Faculty of Science, The M.S. University of Baroda, Baroda.

The subject matter of this thesis is in the form of the pairs of inverse series relations of general nature that are capable of providing inverse relations of various polynomials and, also yielding the extended versions of the inverse series relations classified by John Riordan.

There are total seven chapters in the thesis. Chapter-1 which introduces briefly, the generalized Hypergeometric series and the associated polynomials, also discusses the development of inverse series relations; and their applicability to deducing inverse relations of several orthogonal as well as non-orthogonal polynomials. This chapter also furnishes the Riordan's classification of a variety of inverse pairs. This is followed by the discussion on the Basic analogues of several polynomials that are associated with Basic Hypergeometric series, a short account of which glances through the basic Exponential functions, basic Trigonometric functions, and the basic Bessel functions. The chapter concludes with the discussion on applications of some

known basic inverse series relations to obtaining inverse series of several known basic polynomials.

A shortened version of the contents of the remaining chapters may be found in the following published papers/communicated work.

1. An Expansion formula and associated generating relations, Simon Stevin, A Quarterly J. of Pure and Appl. Math., 63 (1989), No. 3-4, 305-310.
2. On a q -Inversion Theorem, The Math. Student, 58 (1990), 101-108.
3. A q -analogue of a general class of polynomials and its inverse, Indian J. pure appl. Math., 22 (10) (1991), 839-843.
4. A q -analogue of a general class of polynomials and its inverse II, (communicated).
5. A general Basic Inverse series relation, (communicated).
6. Certain extensions of a general inversion formula, (communicated).
7. q -Extensions of a general basic inverse series relation, (communicated).
8. Extensions of Riordan's inverse pairs and their basic analogues, (communicated).
9. Extensions of Racah and Wilson's polynomials, (communicated).
10. Extensions of q -Racah and Askey-Wilson's polynomials, (communicated).
11. Some results involving a general class of basic polynomials, (communicated).

12. Some results involving a general class of basic polynomials II. (communicated).

It is pleasant and foremost duty to express my deep sense of gratitude to my guide Prof. J. P. Singhal for his invaluable guidance, constant encouragement and help during the entire period of research work. Prof. Singhal has also collaborated with me in the papers referred to earlier.

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I am also indebted to all those persons whose work (quoted in Bibliography) I have consulted.

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