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ON SOME NEW GENERATING FUNCTIONS OF HYPERGEOMETRIC POLYNOMIALS

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Abstract: This paper contains mainly three theorems involving Kampé de Fériet's function $F^{(2)}$ and expressed in terms of single and double Laplace and Beta integrals. The theorems, in turn, yield, as special cases, a number of linear, bilinear and bilateral generating functions of generalized polynomials of Rice, Jacobi polynomials, Ultraspherical, Generalized Laguerre, Bedient polynomials and other polynomials hypergeometric in nature. One variable special cases of generalized polynomials are useful in several applied problems.

Keywords and Phrases: Linear, Bilinear and Bilateral Generating Functions, Eulerian integrals of first and second kind; Hankel's contour integral, Kampé de Fériet's double hypergeometric function $F^{(2)}[x, y]$, Srivastava's triple hypergeometric function $F^{(3)}[x, y, z]$ and Orthogonal polynomials.

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1. Introduction

Hypergeometric Polynomials occupy the pride place in the literature on special functions. One variable special functions namely generalized Rice polynomials, Jacobi polynomials, Ultraspherical polynomials, Legendre polynomials, generalized Laguerre polynomials and other polyomials hypergeometric in nature, are closely