

**A HYPERGEOMETRIC GENERATING FUNCTION INFLUENCED
BY THE WORK OF BURCHNALL, KRALL-FRINK AND
RAINVILLE**

M. I. Qureshi and Aarif Hussain Bhat

Department of Applied Sciences and Humanities,
Faculty of Engineering and Technology,
Jamia Millia Islamia (A Central University), New Delhi -110025, INDIA

E-mail : miqureshi_delhi@yahoo.co.in, aarifsaleem19@gmail.com

(Received: Oct. 11, 2019 Accepted: Jan. 23, 2020 Published: Apr. 30, 2020)

Abstract: In this paper, we obtain a hypergeometric generating relation associated with Srivastava-Daoust double hypergeometric function using a closed form of reduction formula and series rearrangement technique. Some results of Burchnall, Krall-Frink and Rainville are also obtained as special cases of our result.

Keywords and Phrases: Srivastava-Daoust double hypergeometric function; Series rearrangement technique; Reduction formula; Rainville polynomials; Generalized Bessel polynomials.

2010 Mathematics Subject Classification: 33C45, 05A15, 33C20.

1. Introduction and Preliminaries

In this paper, we shall use the following notations:

$\mathbb{N} := \{1, 2, 3, \dots\}$; $\mathbb{N}_0 := \mathbb{N} \cup \{0\}$; $\mathbb{Z}_0^- := \mathbb{Z}^- \cup \{0\} = \{0, -1, -2, -3, \dots\}$.

The symbols \mathbb{C} , \mathbb{R} , \mathbb{N} , \mathbb{Z} , \mathbb{R}^+ and \mathbb{R}^- denote the sets of complex numbers, real numbers, natural numbers, integers, positive and negative real numbers, respectively.

Pochhammer symbol

The Pochhammer symbol $(\alpha)_p$ ($\alpha, p \in \mathbb{C}$) [11, p.22 Eq.(1), p.32, Q.N.(8) and Q.N.(9)], see also [16, p.23, Eq.(22) and Eq.(23)] is defined by

$$(\alpha)_p = \frac{\Gamma(\alpha + p)}{\Gamma(\alpha)}$$