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GENERATING FUNCTIONS OF BIORTHOGONAL POLYNOMIALS SUGGESTED BY GENERALIZED HERMITE POLYNOMIALS

P. G. Andhare[⋆] **and M. S. Chaudhary**[⋆⋆]
[⋆]Department of Mathematics
R. B. N. B. College, Shrirampur-413706, India

[⋆⋆]Department of Mathematics
Shivaji University, Kolhapur-416004, India

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Abstract: In present paper, we obtain the generating function and bilateral generating function for biorthogonal polynomials suggested by the generalized Hermite polynomials.

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1. Introduction

Recently Andhare and Jagtap [2] constructed a pair of biorthogonal polynomials suggested by generalized Hermite polynomials.

$$S_{2n}(x;k,l) = \frac{n!\,(-1)^n\,2^{2n}\,(1/2)_n\,Z_n^{\beta}(x^{2k};l)}{(1+\beta)_n}$$

$$= \frac{2^{2n}(1/2)_n\Gamma(ln+\beta+1)}{(1+\beta)_n}\sum_{j=0}^{n}(-1)^j\binom{n}{j}\frac{x^{2kln-2klj}}{\Gamma(ln-lj+\beta+1)} \qquad (1.1)$$

$$S_{2n+1}(x;k,l) = \frac{(-1)^n\,n!\,(3/2)_n\,2^{2n+1}\,x^l\,z_n^{-\beta l}(x^{2k};l)}{(1-\beta)_n}$$

$$= \frac{(3/2)_n 2^{2n+1}\Gamma(ln-\beta l+1)}{(1-\beta)_n}\sum_{j=0}^{n}(-1)^j\binom{n}{j}\frac{x^{2kln-2klj+l}}{\Gamma(ln-lj+\beta l+1)} \qquad (1.2)$$

and

$$T_{2n}(x;k,l) = \frac{(-1)^n\,n!\,(1+n)_n}{(1+\beta)_n}\,Y_n^{\beta}(x^{2k};l)$$