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New Finite Integrals Involving Product of Modified Multivariable H-function

Dr. Rashmi Singh and Kamini Gour*
Head, Department of Mathematics,
B.N.P.G. Girls College, Udaipur
*Lecturer, Department of Mathematics,
B.N.P.G. College, Udaipur

Abstract : The aim of the present paper is to study some new finite integrals. We obtain two finite double integrals involving the product of the Modified Multivariable H-function and Srivastava Polynomials. The values of the integrals are obtained in terms of $\Psi(Z)$ (the logarithmic derivative of $\Gamma(z)$). We establish an interesting integral relation in terms of Modified Multivariable *H*-function. Present finding are the most general in nature and act as the key formulas from which we can obtain their special cases.

Keywords : Modified Multi-variable *H*-function, general class of Polynomials, generalized Wright hypergeometric function logarithmic derivative of $\Gamma(z)$.

Introduction : The modified multivariable *H*-function employed as kernel of multi-dimensional transform defined by Prasad and Singh [5] on the lines of Srivastava and Panda [7], Prasad and Maurya [4] is as follows:

$$H_{p,q:|R:p_1,q_1;\ldots;p_r,q_r}^{m,n:|R':m_1,n_1;\ldots;m_r,n_r}$$

$$\left[\begin{matrix} z_1 \\ \vdots \\ z_r \end{matrix}\middle|\begin{matrix} (a_j;\alpha'_j,\ldots,\alpha_j^{(r)})_{1,p}:(e_j;u'_j g'_j,\ldots,u_j^{(r)} g_j^{(r)})_{1,IR'}:(c'_j,\gamma'_j)_{1,p_1};\ldots;(c_j^{(r)},\gamma_j^{(r)})_{1,p_r} \\ (b_j;\beta'_j,\ldots,\beta_j^{(r)})_{1,q}:(l_j;U'_j f'_j,\ldots,U_j^{(r)} f_j^{(r)})_{1,IR}:(d'_j,\delta'_j)_{1,q_1};\ldots;(d_j^{(r)},\delta_j^{(r)})_{1,q_r} \end{matrix}\right]$$

$$= \frac{1}{(2\pi\omega)^r}\int_{L_1}\ldots\int_{L_r} \Phi\ (\xi_1)\ldots\Phi_r(\xi_r)\psi(\xi_1\ldots\xi_r)z_1^{\xi_1}\ldots z_r^{\xi_r}\,d\xi_1\ldots d\xi_r \qquad (1)$$