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On Certain Results Involving Mock- Theta Functions

R.Y. Denis, S.N. Singh* and S.P. Singh*,
Department of Mathematics, DDU, Gorakhpur University, Gorakhpur-273009
*Department of Mathematics, T.D.P.G. College, Jaunpur - 222002,(U.P.) India.
E-mail: ddry@rediffmail.com; snsp39@yahoo.com

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Abstract: In this paper, making use of certain identities, we have established interesting results involving mock-theta functions, partial mock theta functions.
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1. Notations and definitions:

Throughout this note, we shall adopt the following definitions and notations. The q- factorial is defined by,

$$[a;q]_0 = 1$$

$$[a;q]_n = (1-a)(1-aq)...(1-aq^{n-1}), \quad n = 1,2,3,...,$$

and

$$[a;q]_\infty = \prod_{k=0}^{\infty}(1-aq^k).$$

For product of q- shifted factorials, we use the short notation

$$[a_1, a_2, a_3, ..., a_r; q]_n = [a_1;q]_n[a_2;q]_n[a_3;q]_n...[a_r;q]_n,$$

where n is an integer or infinity.
Basic and bilateral basic hypergeometric series are defined by,

$${}_r\Phi_s\left[\begin{array}{l} a_1, a_2, ..., a_r; q; z \\ b_1, b_2, ..., b_s \end{array}\right] = \sum_{n=0}^{\infty}\frac{[a_1, a_2, ..., a_r; q]_n z^n}{[q, b_1, b_2, ..., b_s; q]_n}\left[(-)^n q^{n(n-1)/2}\right]^{1+s-r}.$$

and

$${}_r\Psi_s\left[\begin{array}{l} a_1, a_2, ..., a_r; q; z \\ b_1, b_2, ..., b_s \end{array}\right] = \sum_{n=-\infty}^{\infty}\frac{[a_1, a_2, ..., a_r; q]_n z^n}{[b_1, b_2, ..., b_s; q]_n}\left[(-)^n q^{n(n-1)/2}\right]^{s-r}.$$