South East Asian J. of Math. & Math. Sci. **ISSN : 0972-7752**
Vol.13, No.2, 2017, pp. 19-26

GENERALIZATION OF CERTAIN CONTINUED FRACTIONS OF SRINIVASA RAMANUJAN

Shyamli Gupta

Department of Mathematics,
Institute of Basic Science, Khandari Campus,
Dr. Bhim Rao Ambedkar University, Agra, U.P., INDIA
E-mail: shyamlig@gmail.com

(Received: July 27, 2017)

Abstract: In this paper we have established certain continued fraction representation for the ratio of abnormal basic hypergeometric series with some of its contiguous functions. We have also obtained some interesting special cases of our continued fraction expansions which generalize some famous q-continued fraction identities of Srinivasa Ramanujan.

Keywords and Phrases: Abnormal basic hypergeometric series, basic hypergeometric series, q-series and continued fractions.

2010 Mathematics Subject Classification: 33D15, 11A55.

1. Introduction, Notations and Definitions

Continued fraction has been centre of attraction for applied mathematicians as well as pure mathematicians of previous centuries. In previous centuries there are so many results, which are established in terms of continued fraction. It is also a tool which acts as a bridge between pure and applied mathematicians. So, the attraction of continued fraction for today's mathematicians has also amplified. Ramanujan, a pioneer in the theory of continued fractions has recorded scores of continued fraction identities in chapter 12 of his second notebook [11] and in his lost notebook [3]. Methods used by the great Indian mathematician, Srinivasa Ramanujan, to obtain many of his fascinating results remain a mystery. This part of Ramanujan's work has been treated and developed by several authors including Andrews and Bowman [4], Hirschhorn [9], Adiga [1,2], Denis and Singh [5,6,7,8] and Somashekhra et al. [12] etc. In a recent communication Mishra et al. [10] and Srivastava, Singh and Singh [13] have given some interesting continued fraction