Computations In Ancient Indian Mathematics

V. RAMAKALYANI

Abstract

Since the early times, methods of computation were developed and perfected in India. The development of the decimal place value system, computations on numbers, fractions and zero, first order indeterminate equations, their applications to astronomy and combinatorics as noticed in early Indian mathematics are discussed briefly in this paper. Attempt is made to show that computer programs can be written for the algorithms given by the ancient Indian mathematicians. Though these works were written several centuries ago they are suitable for application even today.

2010 Mathematics Subject Classification.

Keywords : Eight operations, Indeterminate equations, Combinatorics, Programming.

1. INTRODUCTION

Vedāṅga Jyotiṣa (about 1200 B.C.) shows that Indians of the time were quite at ease in performing arithmetical computations. The fact that mathematical science was given great importance is clear from the dictum found in this work :

yathā śikhā mayūrāṇam nāgānāmmaṇayo yathā
tadvat Vedāṅgaśāstrāṇām gaṇitam mūrdhani sthitam.

'As the crests on the heads of peacocks, as the gems on the hoods of snakes, so is *gaṇita* at the top of the sciences known as the *vedāṅga*.'

This statement of *Vedāṅga Jyotiṣa*[1] means that *gaṇitam* is the beautifying aspect (called the queen of sciences in the western world) of the sciences. Veda is synonym for knowledge and *Vedāṅga* stands for limbs or aspects of knowledge.

[1] Vedāṅga Jyotiṣa, ed. by A.Weber with preface of Jagannath Tripathi, Allahabad, 1960. R-VJ-35.

J. of Combinatorics, Information & System Sciences Vol. **44** (2019)**,** No. 1-4, pages 103-134

Corresponding author email: ramakalyani1956@gmail.com
DOI:-https://doi.org/10.32381/JCISS.2019.44.1-4.7