

Review of Formulae of Ganita Kaumadi (A Modern Approach)

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Abstract :

Narayana Pandita has given formulae in different stanza in prosody form. Among them here a stanza is used for the falsity and truth of the statement by mathematical logic and inductions. The aim of this paper is to formulize a concept for investigating the human behavior by finding the number of true and false statements in speaking among the people. Considering a stanza is: Kamukaha pancha panyastriyateshu cha dwau2 priyawapriyaste traya3stan prithak, Twam priyoashiti mey bhashmanaadbhutam kani satyanyasatyani shighram vadha .Here the Number of false statements equals: Number of recognized people \times (Number of kin recognized people+1)-2 \times Number of kin recognized people.

Key Words : Kaumudi, stanza, true, false, sequential.

Historical Background :

Narayana Pandita (1340–1400) was a great mathematician of Bharatavarsa. He had written an arithmetical treaty 'Ganita Kaumudi' in 1356 and an algebraic treatise called Bijganita Vatamsa. He is also thought to be the author of an elaborate commentary of Bhaskara Second's Lilavati, titled Karmapradipika that contains seven different methods for squaring numbers. Narayanan's other major works contain a variety of mathematical developments, including a rule to calculate approximate values of square roots, investigations into the second order indeterminate equation $nq^2 + 1 = p^2$, that is Pell's equation and the solutions of indeterminate higher-order equations, mathematical operations with zero, several geometrical rules. Pandita is also credited with developing a method for systematic generation of all permutations of a given sequence [1].

Now, here I concerned on a stanza of Ganita Kaumudi of Narayana Pandita for exploring the hidden mathematical them of that stanza.

सैकेष्टगुणाः पुरुषा द्विगुणेषुना भवन्त्यसत्यानि । तैरुना पुरुषकृतिः शेषं सत्यानि वचनानि ॥
उदाहरणम् ।
कामुकाः पञ्च परायस्त्रियस्तेषु च द्वौ प्रियावप्रियास्तत्रयस्तान् पृथक् ।
त्वं प्रियोऽसीति मे भाषमाणाऽद्भुतं । कानि सत्यान्यसत्यानि शीघ्रं वद ॥
न्यासः । पुरुषाः ५ । प्रियौ २ । अप्रियाः ३ । एकेनेष्टेन जातान्यसत्यानि ८ सत्यवचनानि १७ ।
द्विकेनेष्टेनासत्यानि ११, एवमिष्टवशादनेकधा ।”[3].

A stanza taken here from the Ganita Kaumudi copied by Laxmipati Pande (1815-1888 B.S.) in 1875-1888 B.S. It consist 3 parts; first part consist 20 pages; second part consist 35 pages and third part also consist 35 pages. The formula explored here is very behavioral to human beings. I explored the theme of the stanza on the basis of Naya Raj Pant as,