Vedic Ganita Sutras

Document 01
Vedic Ganita Sutras focus upon Vedic Mathematics, Science & Technology

Dr. Sant Kumar Kapoor,
Ved Ratan

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Abstract

Present humble initiative is an attempt to visit **Vedic Ganita Sutras[1]** values with focus upon Vedic Mathematics, Science & Technology. Vedic Ganita Sutras Text is in Devnagri script. With it, the starting take off is to be with **Devnagri alphabet format[2]** itself. And, as such, Sathapatya (Geometric Format of manifestations reaching us as values of Sathapatya upveda of Athraveda) becomes the foundational base of whole super structure of values of Ancient Disciplines of Vedic Mathematics, as well as of Vedic Mathematics, Science & Technology.
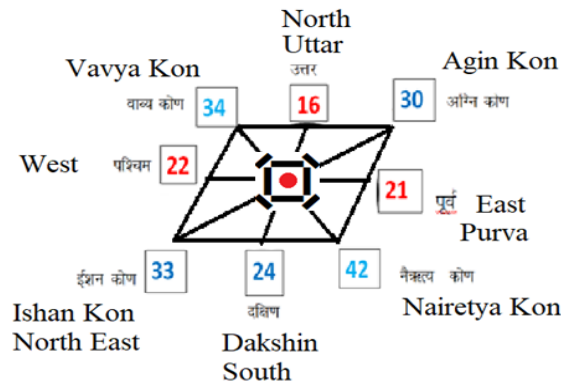
It is the **comparative formats of Geeta text[3]** (Vedanta Prasthantri) and of Vedic Ganita Sutras text, which that way becomes the gateway of this pilgrimage. Vedic Ganita Sutras text organization is of cyclic features, as much as that from last, sixteenth Sutra the natural reach back in continuity is at Sutra 1 itself as both Sutra 16 and Sutra 1 are of 16 letters each.

Words to Syllables to Letters to their placement values in Devnagri Alphabet, and further, values transcendence flow through vowels and their manifestations, as well as synthesis of manifestations are the features of values which provide us insight about the Vedic mathematical basis of Vedic mathematics science and Technology as Ancient Discipline of Vedic Times. The real challenge for the modern mind is to have natural transition from Rigved Samhita to Aadi Valmiki Ramayana to Ur-Mahabhartam and to be parallel with Geeta text as Vedanta Prasthantri as of a format parallel with the format of Vedic Ganita Sutras of values of **Sathapatya of Devnagri Alphabet format[4]**.

1. Vedic Mathematics, Science & Technology (VMS & T)

VMS & T is an Ancient Discipline of Existence Phenomenon of our solar universe, within and without frames, including existence within Human Frame.

Both, Surya (Sun) as well as Pursha (Human) beings are approached as 6-space content bodies. The manifestation of Existence Phenomenon itself is taken as manifestation of values flow through and as Surya Prakash (Sun light) through Dhruv / Pole Star / 7-space origin seat of Surya, as Eight directional frame of value 222 of split as under :-

2. Manifestation as of 5-space contents (element) base

Vedic systems approach Existence Phenomenon as of 9-space contents : Prithavi पृथ्वी Earth, Aapa आप Water, Agni अग्नि Fire, Vayu वायु Air, Akash आकाश Space, Kaal काल Time, Disha दिशा Direction, Atma आत्मा Soul and Maan मन Mind. The manifestation base elements are five, namely Prithavi पृथ्वी Earth, Aapa आप Water, Agni अग्नि Fire, Vayu वायु Air, Akash आकाश Space.

3. 5 x 5 varga consonants

Five sequential rules of 5 x 5 varga consonants are of Sathapatya of bases of

(i)   linear order first element (Prithavi पृथ्वी Earth) as of five folds of values (1, 2, 3, 4, 5) / (1-space as dimension fold / letter (क्) 2-space as boundary fold (ख्), 3-space as domain fold (ग्), 4-space as origin fold (घ्) and 5-space as base fold (ङ्).

(ii)   Spatial order second element (Aapa आप Water) as of five folds of values (2, 3, 4, 5, 6) / (2-space as dimension fold / letter (च्) 3-space as boundary fold (छ्), 4-space as domain fold (ज्), 5-space as origin fold (झ्) and 6-space as base fold (ञ्).

(iii) Solid order third element (Agni अग्नि Fire) as of five folds of values (3, 4, 5, 6, 7) / (3-space as dimension fold / letter (ट्) 4-space as boundary fold (ठ्), 5-space as domain fold (ड्), 6-space as origin fold (ढ्) and 7-space as base fold (ण्).

(iv) Creative order fourth element (Vayu वायु Air) as of five folds of values (4, 5, 6, 7, 8) / (4-space as dimension fold / letter (त़) 5-space as boundary fold (थ़), 6-space as domain fold (द़), 7-space as origin fold (ध़) and 8-space as base fold (ऩ).

(v) Transcendental order fifth element (Akash आकाश Space) as of five folds of values (5, 6, 7, 8, 9) / (5-space as dimension fold / letter (प़) 6-space as boundary fold (फ़), 7-space as domain fold (ब़), 8-space as origin fold (भ़) and 9-space as base fold (म़).

4. (3, 4, 5, 6, 7) spaces, sciences & Technology

3-space content as domain fold of linear order letter (ग़) is the basis of linear order base of first element, as a set up of 3-space body personified of 3-space, science & technology. Five different roles of 3-space content (hence of 3-space body itself) are : (i) 3-space as domain fold (ii) 3-space as boundary fold (iii) 3-space as domain fold (iv) 3-space as origin fold and (v) 3-space as base fold. Our well known body (cube ▤) is a 3-space content body. Sphere (◯), as well is a 3-space content body. Cube as a synthetic set up of 8 sub cubes with 8 corner points, 12 edges, 6 surfaces, 1 volume, 3 dimensional axes and 1 origin makes a set up of 31 structural components. It has 4 internal diagonals as translation paths of pairs of 3 dimensional frames of half dimensions vested in corner points of internal diagonals, get synthesized as quadruple three dimensional frames of full dimensions, which together with the three dimensional frame at centre of cube make a set up of five solid dimensional frames of 5-space manifesting as origin of origin of 3-space itself. These together with connected values and features make a 3-space Vedic Mathematics, Science & Technology. Formulation (घन / Ghan / cube) is of TCV 14 / summation value of four folds (2, 3, 4, 5) of hyper cube 4 / 4-space body of spatial order, solid boundary, creative domain and transcendental origin. Formulation (गुण / Gun / value feature) as well is of TCV (14). It is basic constituent formulation of the text of Vedic Ganita Sutra 16 (गुणकसमुच्चयः) reach back from here to Vedic Ganita Sutra 1 'एकाधिकेन पूर्वेण' of basic constituent formulation 'एक / ek / one' of TCV = एक = 8 and cube being a synthetic set up of 8 sub cubes and transition from 3-space as domain to 3-space as boundary together with the connected features and values will help comprehend and imbibe the cyclic organization format features and values of text of Vedic Ganita Sutras, as well as of the Discipline of Vedic, Mathematics Science & Technology. This will further help comprehend and imbibe as to sequential unfolding of (4, 5, 6 and 7) spaces mathematics, sciences & technologies of (4, 5, 6 and 7) spaces of (4, 5, 6 and 7) domains / letters (ज, ढ, द, ब).

5. Vedic Ganita Sutras Text

Vedic Ganita Sutras text is a composition of 283 letters which in its synthetic cyclic format (joint) as a set up of 283 + 1 = 284 is of a range lively within the gaps of 18 punctuations of 700 shlaoks as (47, 72, 43, 42, 29, 47, 30, 28, 34, 42, 55, 20, 34, 27, 20, 24, 28, 78) :-

C1 = Serial number, C2 = Shalokas, C3 = Gap / difference from the previous shalokas range, C4= Total difference value

C1	C2	C3	C4
1	47	31	31
2	72	25	56
3	43	29	85
4	42	01	86
5	29	13	99
6	47	18	117

C1	C2	C3	C4
7	30	17	134
8	28	02	136
9	34	06	142
10	42	08	150
11	55	13	163
12	20	35	198

C1	C2	C3	C4
13	34	14	212
14	27	07	219
15	20	07	226
16	24	04	230
17	28	04	234
18	78	50	284

6. Comparative / consolidated table of Geeta and Ganita Sutras

The comparative / consolidated formats of Geeta and Ganita Sutras is :-
Sh = Shalokas Lt = Letters

Table 1 Geeta chapters and Ganita Sutras				Table 2 Ganita Sutras Geeta chapters			
Geeta Chapter	Ganita Sutra	Geeta Chapter	Ganita Sutra	Ganita Sutras	Geeta Chapter	Ganita Sutras	Geeta Chapter
1	10	10	--	1	3	9	18
2	11	11	5	2	5	10	1
3	1	12	12	3	7	11	2
4	13	13	6	4	9	12	12
5	2	14	14	5	11	13	4
6	15	15	7	6	13	14	14
7	3	16	16	7	15	15	6
8	--	17	8	8	17	16	16
9	4	18	9				

7. Consolidated format of Vedic Ganita Sutras and Upsutras

SN	Sutra / Upsutra	SN	Sutra / Upsutra
1	Ganita Sutra 1	16	Ganita Sutra 9
2	Upsutra 1	17	Upsutra 8
3	Ganita Sutra 2	18	Ganita Sutra 10
4	Upsutra 2	19	Upsutra 9
5	Ganita Sutra 3	20	Ganita Sutra 11
6	Upsutra 3	21	Upsutra 10

7	**Ganita Sutra 4**	22	**Ganita Sutra 12**
8	**Upsutra 4**	23	**Upsutra 11**
9	**Ganita Sutra 5**	24	**Ganita Sutra 13**
10	**Upsutra 5**	25	**Upsutra 12**
11	**Ganita Sutra 6**	26	**Ganita Sutra 14**
12	**Upsutra 6**	27	**Upsutra 13**
13	**Ganita Sutra 7**	28	**Ganita Sutra 15**
14	**Upsutra 7**	29	**Ganita Sutra 16**
15	**Ganita Sutra 8**		

8. Distinct letters of text of Vedic Ganita Sutras and Upsutras

Text of Vedic Ganita Sutras and Upsutras avail following 36 distinct letters of Devnagri alphabets

(1) अ (2) आ (3) इ (4) ई (5) उ (6) ऊ (7) ऋ (8) ए (9) ओ (10) ऐ (11) क् (12) ख् (13) ग् (14) घ् (15) ङ् (16) च् (17) ज् (18) ञ् (19) ट् (20) ण् (21) त् (22) द् (23) ध् (24) न् (25) प् (26) भ् (27) म् (28) य् (29) र् (30) ल् (31) व् (32) श् (33) स् (34) ष् (35) ः (36) ˙

Table of distinct letters with TCV values, features and Sathapatya

C0 = Serial number, C1 = letter, C2 = TCV value, C3 = Sathapatya, C4 = Feature
Dia = Dimension, Bou = Boundary, Dom = Domain, Org = Origin, Bas = Base
Sdf = Space dimensional frame, Yama = Yama, Ebf = End boundary fold, Ut = Upward Transcendence

C0	C1	C2	C3	C4	C0	C1	C2	C3	C4	C0	C1	C2	C3	C4
1	अ	1	h½	Sdf	13	क्	1	h ½	Dia	25	ड्	5	h1½	Bas
2	आ	2	H1	Sdf	14	ख्	2	H1	bou	26	ञ्	6	H2	Bas
3	इ	2	H1	Sdf	15	ग्	3	h1	Dom	27	ण्	7	h2	Bas
4	ई	4	D1	Sdf	16	घ्	4	D1	Org	28	न्	8	D2	Bas
5	उ	3	h1	Sdf	17	च्	2	H1	Dia	29	म्	9	h2½	Bas
6	ऊ	6	H2	Sdf	18	ज्	4	D1	Dom	30	य्	1	h ½	Ebf
7	ऋ	4	D1	Sdf	19	ट्	3	h1	Dia	31	र्	3	h1	Ebf
8	ए	6	H2	Sdf	20	त्	4	D1	Dia	32	ल्	5	h1½	Ebf
9	ओ	7	h2	Sdf	21	द्	6	H2	Dom	33	व्	7	h2	Ebf
10	ऐ	8	D2	Sdf	22	ध्	7	h2	Org	34	श्	2	H1	Ut
11	˙	9	h2½	Yama	23	प्	5	h1½	Dia	35	स्	3	h1	Ut
12	ः	13	h3½	Yama	24	भ्	8	D2	Org	36	ष्	6	H2	Ut

Vedic Ganita Sutras[1]

1.1 Ganita Sutra

(1) एकाधिकेन पूर्वेण। (2) निखिलं नवतश्चरमं दशतः। (3) ऊर्ध्वतिर्यग्भ्याम् । (4) परावर्त्य योजयेत्। (5) शून्यं साम्यसमुच्चये । (6) (आनुरूप्ये) शून्यमन्यत्। (7) संकलनव्यवकलनाभ्याम्। (8) पूरणापूरणाभ्याम्। (9) चलनकलनाभ्याम्। (10) यावदूनम्। (11) व्यष्टिसमष्टिः। (12) शेषाण्यङ्केन चरमेण। (13) सोपान्त्यद्वयमन्त्यम् । (14) एकन्यूनेन पूर्वेण। (15) गुणितसमुच्चयः। (16) गुणकसमुच्चयः।

This text is a composition of 283 letters.

1.2 Ganita Upsutra

(1) आनुरूप्येण। (2) शिष्यते शेषसंज्ञः। (3) आद्यमाद्ये नान्त्यमन्त्येन । (4) केवलैः सप्तकं गुण्यात्। (5) वेष्टनम्। (6) यावदूनं तावदूनम्। (7) यावदूनं तावदूनीकृत्य वर्गं च योजयेत्। (8) अन्त्ययोर्दशकेऽपि। (9) अन्त्ययोरेव। (10) समुच्चयगुणितः। (11) लोपनस्थपनाभ्याम्। (12) विलोकनम्। (13) गुणितसमुच्चयः समुच्चयगुणितः।

This text is a composition of 236 letters.

II
Devnagri alphabet format[2]

Devnagri Varanmala देवनागरी वर्णमाला

Nine vowels
अ इ उ ऋ ऌ ए ओ ऐ औ

5 x 5 Varga consonants
क ख ग घ ङ
च छ ज झ ञ
ट ठ ड ढ़ ण
त थ द ध न
प फ ब भ म

Anthstha letters:
य र ल व

Ushmana letters:
श स ष ह

Yama letters

III
Comparative formats of Geeta text[3]

Interrelationship table of Geeta chapters Yogas and Ganita Sutras

Sh = Shalokas Lt = Letters

Geeta chapter with Yoga name and its TCV value	Sh	Ganita Sutra with TCV value	Lt
1 अर्जुनविषादयोग (TCV 55) ArjunVishad Yoga	47	10 यावदूनम् (TCV 41) Yavadunam	9
2 सांख्ययोग (TCV 32) Sankhya Yoga	42	11 व्यष्टिसमष्टिः (TCV 58) Vyastisamastih	14
3 कर्मयोग (TCV 26) Karam Yoga	43	1 एकाधिकेन पूर्वेण (TCV 75) Ekadhikena Purvena (also a orollary)	16
4 ज्ञानकर्मसंन्यासयोग (TCV 75) Gyankaramsanyas Yoga	42	13 सोपान्त्यद्वयमन्त्यम् (TCV 80) Sopantyadvayamantyam	20
5 कर्मसंन्यासयोग (TCV 54) Karamsanyas Yoga	29	2 निखिलं नवतश्चरमं दशतः (TCV 107) Nikhilam Navatascaramam	28
6 आत्मसंयमयोग (TCV 53) Atamsayam Yoga	47	15 गुणितसमुच्चयः (TCV 56) Gunitasamuccayah	16
7 ज्ञानविज्ञानयोग (TCV 63) GyanVighyan Yoga	30	3 ऊर्ध्वतिर्यग्भ्यायम् (TCV 56) Urdhva-tiryagbhyam	15
8 अक्षरब्रह्मयोग(TCV 53) Aksharbraham Yoga	28	**Vedic mathematics Base values**	---
9 राजविद्याराजगुह्ययोग (TCV 67) Rajvidyarajguhya Yoga	34	4 परावर्त्य योजयेत् (TCV 52) Paravartya Yojayet	17
10 विभूतियोग (TCV 41) Vibhuti Yoga	42	**Spiritual base values**	---
11 विश्वरूपदर्शनयोग (TCV 67) VishwarupaDarshan Yoga	55	5 शून्यं साम्यसमुच्चये (TCV 71) Sunyam Samyasamuccaye	20
12 भक्तियोग (TCV 28) Bhakti Yoga	20	12 शेषाण्यङ्.केन चरमेण (TCV 75) Sesanyankena Caramena	20
13 क्षेत्रक्षेत्रज्ञविभागयोग (TCV 84) KshetraKshetragyavibhag Yoga	34	6 (आनुरूप्ये) शून्यमन्यत् (TCV 76) (Anurupye) Sunyamanyat	19
14 गुणत्रयविभागयोग (TCV 57) Guntriyavibhag Yoga	27	14 एकन्युनेन पूर्वेण (TCV 84) Ekanyunena Purvena	17
15 पुरुषोत्तमयोग(TCV 61) Purshotamm Yoga	20	7 संकलनव्यवकलनाभ्याम् (TCV 85) Sankalana-vyavakalanabhyam	24
16 देवासुरसंपद्विभगयोग (TCV 90) Devasur Sampadibhag Yoga	24	16 गुणकसमुच्चयः (TCV 55) Gunakasamuccayah	16
17 श्रद्धात्रयविभागयोग (TCV 62) Shardatriya Vibhag Yoga	28	8 पूरणापूरणाभ्याम् (TCV 68) Puranapuranabhyam	16
18 मोक्षसंन्यासयोग (TCV 64) Moksha Sanyas Yoga	78	9 चलनकलनाभ्याम् (TCV 56) Calana-kalanabhyam	16

Sathapatya of Devnagri Alphabet format[4].

Numbers alphabets
with Sathapatya formats

Nine vowels

1	2	3	4	5	6	7	8	9
h½	H1	h1	D3	h1½	H2	h2	D4	h2½

5 x 5 Varga consonants

1	2	3	4	5
h½	H1	h1	D3	h1½
2	3	4	5	6
H1	h1	D3	h1½	H2
3	4	5	6	7
h1	D3	h1½	H2	h2
4	5	6	7	8
D3	h1½	H2	h2	D4
5	6	7	8	9
h1½	H2	h2	D4	h2½

Anthstha letterś

1	3	5	7
h½	h1	h1½	h2

Ushmana letterś

2	3	6	9
H1	h1	H2	h2½

Yama letters

9	10	11	12	13	14	15	16
h2½	H3	h3	D5	h3½	H4	h4	D6

V
Organization data features of Ganita Sutras

(A)

Composition Organization Data
of Vedic Ganita sutras

W = Words, S = Syllables, L = Letters,
TCV=Transcendental Code Value, VCV = Vedic code value

SN	Sutra	W	S	L	TCV	VCV
1	एकाधिकेन पूर्वेण ।	2	5+3 =8	9+7=16	75	23
2	निखिलं नवतश्चरमं दशतः	3	3+6+3 =12	7+14 +7=28	107	52
3	ऊर्ध्व तिर्यग्भ्याम्	1	5	15	58	36
4	परावर्त्य योजयेत् ।	2	4+3 = 7	10+7 =17	52	32
5	शून्यं साम्यसमुच्चये	2	2+6 = 8	6+14 =20	71	42
6	(आनुरूप्ये) शून्यमन्यत् ।	2	4+4 = 8	8+11 =19	76	22
7	संकलन व्यवकलनाभ्याम् ।	1	10	24	91	33
8	पूरणा पूरणाभ्याम् ।	1	6	16	68	26
9	चलन कलनाभ्याम् ।	1	7	16	59	23
10	यावदूनम् ।	1	4	9	41	18
11	व्यष्टिसमष्टिः ।	1	5	14	58	32
12	शेषाण्यङ्केन चरमेण ।	2	4+4=8	12+8 =20	79	43
13	सोपान्त्य द्वयमन्त्यम् ।	1	7	20	80	44
14	एकन्यूनेन पूर्वेण ।	2	5+3 = 8	10+ 7= 17	84	14
15	गुणितसमुच्चयः	1	7	16	56	38
16	गुणकसमुच्चयः ।	1	7	16	55	33
	Total 16	24	117	283	1110	511

(B)
Composition Organization Data
of Vedic Ganita Upsutras

W = Words, S = Syllables, L = Letters,
TCV=Transcendental Code Value, VCV = Vedic code value

SN	Upsutra	W	S	L	TCV	VCV
1	आनुरूप्येण।	1	5	10	42	9
2	शिष्यते शेषसंज्ञः।	2	3+4=7	7+11= 18	74	44
3	आद्यमाद्येनान्त्यमन्त्येन	1	9	23	96	40
4	केवलैः सप्तकं गुण्यात्।	3	3+3+2=8	7 + 8 + 6 = 21	92	36
5	वेष्टनम्।	1	3	08	41	17
6	यावदूनं तावदूनम्।	2	4+4=8	9 + 9=18	85	35
7	यावदूनं तावदूनीकृत्य वर्गं च योजयेत्।	5	4+6+2+ 1+3=16	9+13+6+2 +7 =37	144	46
8	अन्त्ययोर्दशकेऽपि।	1	7	16 (17)	53 (54)	24
9	अन्त्ययोरेव।	1	5	11	40	13
10	समुच्चयगुणितः।	1	7	16	56	37
11	लोपनस्थपनाभ्याम्।	1	7	17	73	28
12	विलोकनम्।	1	4	09	44	13
13	गुणितसमुच्चयः समुच्चयगुणितः।	2	7+7=14	16 + 16= 32	112	74
	TOTAL	22	100	236	952	416

April 11, 2024