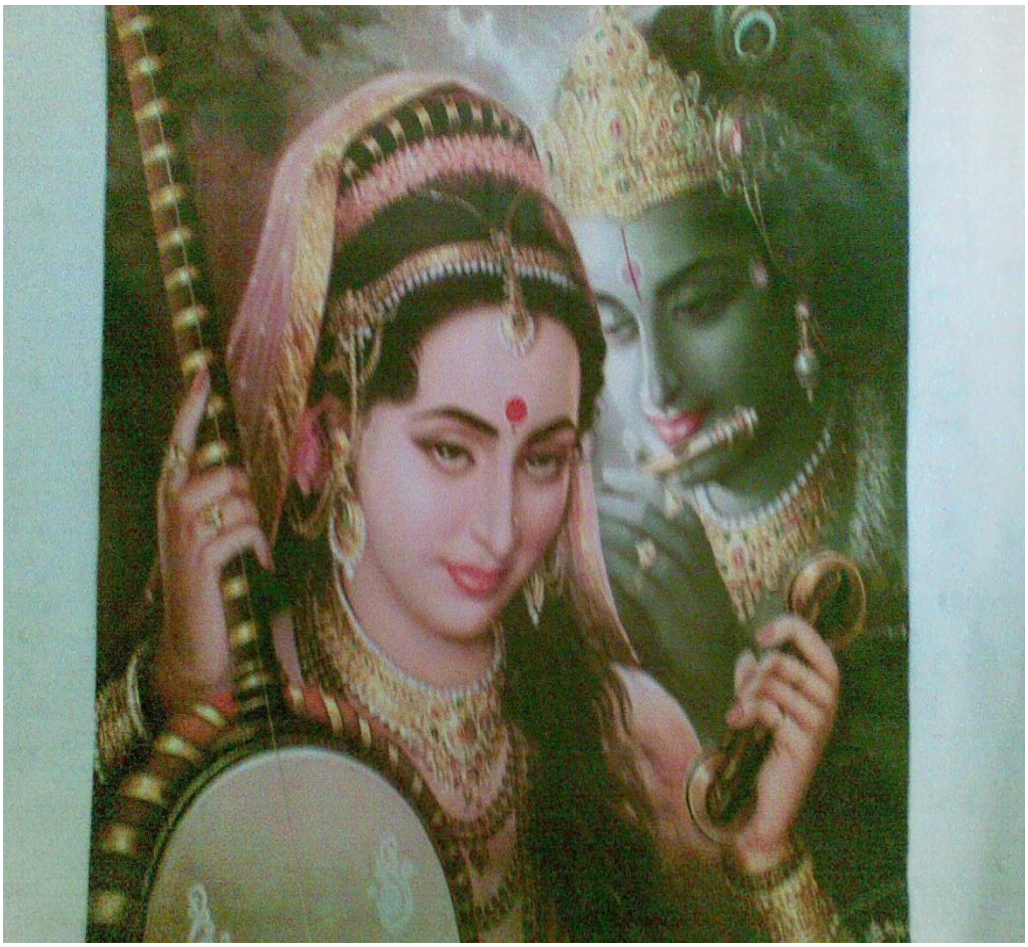

BHATHKHANDE SANGITH

VISHARAD PT I - VOCAL

Theory notes

The affiliated Examination Center of Bhathkhande Sangith Vidyapith in Lucknow, India

387 - SANDASA KALA PEETAYA, SRI LANKA

Comparisson of Shruti and Swara

Shurti and swara are two different names, but actually they are almost one and the same. Both are musical sounds which are heard by the ear and identified one from other. The relation between Shruti and swara are like theeegggold and he ornaments.

- *The detailed study of the controversy regarding equality and inequality of Shruti and Ancient, Medieval and Modern Period*

Similarity

1. All the three writers recognized 22 shruties in an octave (Saptaka)
2. All excepted **S M P** has 4 shrutiesR **D** has 3 shruties and **G N** has 2 shruties.
3. All the three recognized the three musical sound interval 4,3 and 2 shruti interval.

Differences

1. The ancient writers believed in equality of shruties and recognized the 22 shruties the 22 shruties equal, but medieval and modern writers believed inequality.
2. Ancient recognized shruti as a unit while medieval and modern did not agree.
3. The ancient and medieval fixed their Shuddhaswara on the last shruti while modern fixed at the first shruti.
4. The ancient did not know the method of the location of the note on the speaking wire of the veena.
5. The ancient and medieval writers did not know the method of obtaining the frequencies or vibrations, but the modern found the method of obtaining frequency or the vibration.
6. The ancient and mediaval writers took Ga and Ni komal in their shuddhaswarasapthaka. But the modern writers took all the shuddha notes in their shuddhaswarasapthaka.

The calculation and fixation of shuddha and vikrithswara on the stretched wire of a veena according to Pt.Srinavas and Manjirika

LOCATION OF THE SHUDDHA SWARA OF THE SHRINIVAS

Pt. Srinivas took the distance between the two bridges Meru and Guraj of the veena 36 inches. Produced Madya Sa, then the thara Sa was produced at the middle, that is at the 18 inches.

MadyaSa

36 inches

Meru----------Guru

The mid distance of guraj and meru he prodiusedtara Sa. There are 18 inches from mid distance from Guraj.

TaarSa

18 Inch:

Meru----------|----------Guru

Now from the mid distance TaarSa and Guraj he produced AtiTaara Sa

AtiTaarSa

9 Inch:AtiTaarSa

Meru----------|----------|----------Guru

TaarSa (AtiTaar Sa)

Now from the mid distance of madyaSa and the Meru he produced Ma

Ma

18 Inch 27

Meru----------|----------|----------Guru

Ma

The length of the wire between madyaSa and Taar Sa messuring 18 inch: he divided in to three parts. The first part starting from taarSa at a distance of the 24 inches from the Guraj

Pa

24 Inches

Meru----------|--------|----------|----------
Guru

Pa

The shuddhaGa (G) of shrinivas stands exactly in the middle of madyaSa and Pa, this is divided in to two parts the length of the wire between Madya Sa and Pa measuring 12 inches from Meru. There are 30 inches from Guraj to Ga.

Ga

30 inches

Meru----------I----------I----------I----------Guru

Ga

The distance between Meru and Pancham was divided three equal parts. The first part from MeruprodustRishabRi.

Ri

32 inches

Meru---------I---------I---------I---------I----------Guru

Ri

Dha stands exactly of the middle of Pa and TaarSa. Measuring 6 inches it is divided in to two equal parts. So it will be at the distance of 12 inches from Guraj.Then the sound somewhat raised or little higher. In order to get the exact Dha he used the method of ShadjaPanchamBhava.

Dha

Meru----------I---------I----------
Guru

The length of the wire of the Veena between Pa and taarSa measuring 6 inches is divided in to three equal parts. Then the shuddha Ni (Ni) was located. It is exactly 20 inches from the Guraj.

Ni

18 inches, 20 inches

Meru----------I-----I----------
Guru

POSITION OF THE SHUDDHA SWARA (SRI NIVAS)

No	Name of the Swara		Length of the wire
1	MadyaSadja	Sa	36 Inches
2	Rishab	Ri	32 ”
3	Gandhar (Komal)	Ga	30 ”
4	Madyam	Ma	27 ”
5	Pancham	Pa	24 ”
6	Dhaiwat	Dha	21 3/1 ”
7	Nishad	Ni	20 ”
8	TaarShadja	Sa	18 ”
9	AtiTaarShadja	Sa	9 ”

LOCATION OF THE VIKRITH SWARA OF SHRINIVAS

Ri

The length of the wire between Madhya Sa and ShuddhaRi measuring 4 inches was divided in to three equal parts. Then the komalRi will stand at the end of 2nd part from Madhya Sa at a distance of 33 1/3 from the Guraj.

Ga

TeevraGa stands exactly in middle of the Madhya Sa and Dha. If we divide the length of the wire between Madhya Sa and Dha Measuring 44/3. Then the teevraGa will stand exactly in the middle of Sa and Dha at a distance of 28 2/3 from the right Guraj.

Ma

If we divide in to three equal the length of the wire between TeevraGaTaar Sa measuring 32/3 inches then the teevra Ma will stand at the end of the first part from teevraGa at adistance of 25 1/9fromGuraj.

Dha

If the length of the wire Pa and Taar Sa measuring 6 inches is divided in to three 3 equal parts, the komalDha will tend at the end of first part from Pa at distance of 22 inches from Guraj.

Ni

If the distance between Dha and TaarSa measuring 10/3 inches is divided in to three equal parts then the teevra Ni (shuddha Ni) will stand at the end of the second part from Dha 19 1/19inches from the Guraj.

POSSITION OF THE VIKRIT SWARA

SWARA NAME	***SWARA***	***LENGTH***
KomalaRishab	Ri	33 1/3
TeevraGandhar	Ga	28 2/3
TeevraMadhyam	Ḿa	25 1/9
KomalaDha	Dha	22 2/9
TeevraNishad	Ni	19 1/9

TABLE SHOWING THE POSSITION OF SHUDDHA AND VIKRIT SWARA OF MANJARIKAR

No	*Swara name*	*Position*	*Vibration value*
1	Madhya Sadja	36 inches	240
2	Komal Rishab	34 ”	254 2/17
3	Teevra Rishab	32 ”	270
4	Komal Gandhar	30 ”	288
5	Teevra Gandhar	28 2/3	301 17/43
6	Komal Madhyam	27 ”	320
7	Teevra Madhyam	25 ½	388 14/17
8	Panchamm	24 ”	360
9	Komal Dhaivat	22 2/3	381 3/17
10	Teevra Dhaivat	21 1/3	405
11	Komal Nishad	20 ”	432
12	Teevra Nishad	19 1/9	452 4/43
13	Taar Shadja	18 ”	480
14	Ati -Taar Shadja	9 ”	960

SHRUTI SWARA

The Ancient	The Medieval	The Modern writers
600 B.S -800 A.D	800 A.D – 1500 A.D	1500 A.D- UP TO NOW
Shri Bharata, Sri Sharangadeva	Sri Ahobala, Sri Lochan, Sri Haridaya Narayan, SriSrinivas.	Pt.Manjarikar(Bhathkande)
1. Recognized 22 Shrutis in an octave.	These 4 facts were accepted by medieval writers.	These 4 facts were accepted by modern writers.
2. 12 notes (shuddha and vikrith) fixed on 22 Shrutis.		
3. Accepted the Rule of Chatus Chatus Chaiva etc. Sa MA Pa Caried 4 shrutis each, Ri Dha Caried 3 Shrutis each, Ga Ni Caried 2 shrutis each.		
4. Recognized Interval of sound as 4-3-2-4-4-3-2		
5. Fixed Their Shuddha swara and the last shrutis. *S R G M P D N* *4 7 9 13 17 20 22*	This method is accepted by medieval writers.	Fixed their Shuddha swara on the first shruti *S R G M P D N* *1 5 8 10 14 18 22*
6. Shruti interval: N-S, G-M, M-P 4 shrutis each S-R, P-D, 3 shrutis each R-G, D-N, 2 shrutis each	This rule is accepted	Shruti interval: S-R, M-P, P-D, 4 shrutis each R-G, D-N, 3 shrutis each G-M, N-S, 2 shrutis each
7. Believed equality of first to the second shruti was equal to the ratio between any two conversant.	Did not believe equality method of swaras on wire of veena.	Did not believe equality, Recognize in equily.
8. The location of swaras on wire of veena was not conversant.	Found the method of swaras on wire of veena.	The location of swara on wire was known moreover some were clarified.
9. The method of obtaining frequency was not conversant.	The method of obtaining frequency was not conversant.	The method of obtaining frequency was known.
10. Shuddha swara sapthaka was similar to present Kaphi (G N) scale	Accepted	Accepted the Bilaval scale as the shuddha swara saptaka.
11.		Musicologist Mangarikar

		accepted the method of location of shuddha and vikrit swaras. But proved R M' D was not in veal position. So he clarified it. ***Pt.Sriniwas***, R 33 1/3 inches M' 25 1/9 D 22 2/9 ***Pt.Manjirikar*** R 34 inches M' 25 1/2 D 22 2/3 Others were similar with Srinivas

EQUILITY OF SHRUTIS OF THE ANCIENT WRITERS

The concept of equality ofshruties was belived by the ancient writes such as shri Bharat, P.t Sharangadeva. In order to provo it, we have totake 2 Veenas and have tyo put to an aperation called Sarana Which means modal shift.Sarana shuld be done 4 times.

Now let us take 2 veena having 7 wires each and tune them according to the rule of charus chatus chaiva etc.

A

S	R	G	M	P	D	N	(Notes)
4	7	9	13	17	20	22	(Shrutis)

B

S	R	G	M	P	D	N	(Notes)
4	7	9	13	17	20	22	(Shrutis)

Above mentioined 2 veena Having 7 wire are called Shadja-Grama Veenas

Now keep one of the 2 veenas aside. For instance the veena at the night under b category
Next step is to reduce the Sa tension of the Pa (17th) by one shruti of the veena at the left. Now it becomes thus.

S	R	G	M	P	D	N
4	7	9	13	17	20	22

This veena is called Madhya-Grama veena. Comparing with the other untouched veena ,you see only Pa is lowered by one shruti. Due to the change it is called Chala Veena

S	R	G	M	P	D	N
4	7	9	13	17	20	22

Shadja Grama is also called Achala veena.becouse it is not changed.

Now again alla the notes except Pa are to be reduced by one shruti proprortionally.

Now it becomes thus.

S	R	G	M	P	D	N
3	6	8	12	16	19	21

This operation is technically called Prathama Sarana(First modal shift)

Now again Pa is to reduced by one shruti at first and then same thing is to be done for other notes also.

Now it becomes thus.

S	R	G	M	P	D	N
2	5	7	10	15	18	20
		G				N

Chala Veena

S	R	G	M	P	D	N
4	7	9	13	17	20	22
	G				N	

By comparing chala veena with achala veena we see the notes Ga and Ni of chala veena are with Ri and Dha of achala veena.that means the notes of chala veena are lowered by 2 shruties.
This operation is called DVITIYA SARANA (SECOND MODAT SHIFT)

Again repeat the same process by lowering the note Pa by one shruti at first and then the other notes also to be set proportionally shruti.

Now it chala veena becomes thus.

S	R	G	M	P	D	N
1	4	6	10	14	17	19
	R				D	

Chala Veena

S	R	G	M	P	D	N
4	7	9	13	17	20	22
S				P		

Achala veena

By comparing chala veena with achala veena with achala veena we see the notes Ri and Dha of chala veena are tally with Sa and Pa achala veena. This operation is called TATIYA SARANA(THIRD MODAL SHIFT)

Again repeat the same prosess by lowering the note Pa by one shruti at first and then same thing is to be done for the other notes also.now the chala veena becomes thus.

lowering the note by

S	R	G	M	P	D	N
22	3	5	9	13	16	18
S			N	P		

S	R	G	M	P	D	N
4	7	9	13	17	20	22
		G	M			N

By comparing chala veena with achala veena with achala veena we see the S,M,P, of chala veena are tally with N.G,M of achala veena.
Sa=NI
Ma=Ga
Pa=Ma
This operation is called CHATURTA SARANA (FOURTH MODEL SHIFT)

INEQULITY OF SHRUTIS OF THE MEDIEVALAND MODERN WRITERS

Our medieval writers such as Pt. Lochan, pt.Haridaya Narayan and Pt.Shrinivas and the foremost modern writer pt. Bhathkhande did not believe in equality of shrutis that was the concept of Pt. Shri Bharata and Pt.Sharangadeva in ancient period.inequilty of shrutis can be proved by two fact.

1. In term of frequency of swaras
2. In term of musical sound between two swaras

The medieval writers were not conversant with the method of obtaining frequency but they knew the method of location of notes by using a stretched wire of veena in accordance with the rule of chatus chatus chatus chaiva etc. the position of the notes on the shrutis are as follows,

S	**R**	**G**	**M**	**P**	**D**	**N**
4	**7**	**9**	**13**	**17**	**20**	**22**

The sound intervals

4 3 2 4 4 3 2

According to chatus chatus chatus chaiva etc.

S, M, P	carries 4 shrutis each
R, D	carries 3 shrutis each
G, N	carries 2 shrutis each

If we take two pairs of notes S,R and M,P we might have thought that the distance between S to R and M to P is similar. But when we compare with the

shruti intervals we can understand that the two pairs of notes are different from one another.

Now let us see the difference,

Sa to Ri	=	3	Shrutis
Ma to Pa	=	3	Shrutis

From the position of the shrutis the interval of sound between Sa and Ri is not the same Ma and Pa. We can justify it using the method of frequency (but it was not known to the medieval writers)

The frequency of Sa = 240
The frequency of Ri = 270
The ratio of the interval of sound =270/240=9/8

The frequency of Ma = 320
The frequency of Pa = 360
The ratio of the interval of sound =320/360=9/8
According to the ratio of Sa and Ri
The ratio of Ma and Pa seems to be same

But the positions of 4 notes according to the position of the shruti are different.

Ratio.	**position of shrutis.**
Sa-Ri =8:9	Sa-Ri =3 shrutis
Ma-Pa=8:9	Ma-Pa=4 shrutis

According to the shrutis the interval of sound between Ri and Ga is of 2 shrutis, their ratio is 16/15

The frequency of Ri =270
So we can find the frequency of Ga = 270 × 16/15 =288
This is the correct frequency of Ga
Now let us find the frequency of Ri by means of Sa using the same method.
The ratio of Ri and Ga is 16/15. So the ratio of Sa and Ri must be 16/15 becouse they are of 2 shrutis.

Although the interval of sound between (two pairs) Ri-Ga and Sa-Ri is 2 shrutis is each pair they are unequal because of the frequency of the said two pairs of notes being unequal.

There is another method which is used by modern writers to prove the shrutis are unequal. Let us take a sitar. When we press the Jo-d-ka-taar (pairs of copper wires on the two particular frets of the lower octave) we get the sound of Ri and Ga respectively. But we press the Baj-ka-taar (the main wire) on the same frets of the lower octave we get Pa and Dha respectively.

The interval sound of Ri and Ga = 3 Shrutis
The interval sound of Ma and Pa= 4 Shrutis

From the above description of the method, it is clear that the medieval and modern writers did not believe in equality of shrutis.

DEFINITION OF MUSICAL TERMS

Marga: The Music which was composed by Brahama and other Gods after through research, which was demonstrated by Bharat and other Sages before Shiva which definitely gives spiritual strength is called Marga Sangeeth.

Desi: The music which is composed and developed in regions to the taste and liking of the listeners of the place is called Desi Sangeeth.

Nayaki: The traditional music set to swara and taal which has been trained by masters and dispels is called Nayaki.If we sing any traditional set music (Nayaki) and if we present same set composition in beautiful manner through our creative alap. Tan and so on. It will be called Gayaki.

Notes of the western system of music,their intervals of sound and their vibration values.

The western writers have recognized their shuddha swaras of notes almost like the shuddha swaras of our system of music. Their seven notes are known as “C D E F G A B”. They have fixed the position of these seven notes on the basis of their vibration values. The vibration values of their seven notes are,

C=240
D=270
E=300
F=320
G=360
A=400
B=450

They have divided their seven notes into three intervals of sound, major tone, minor tone and semi tone. The interval of sound between their seven notes C D E F G A B is 9/8, 10/9, 16/5, 9/8, 10/9, 9/8 and 16/15 respectively. In other words, the ratio of the interval of sound between C and D = 9/8, between D and E=10/9, between E and F =16/15, between F and G=9/8, between G and A=10/9, between A and B=9/8, and between B and C=16/15, out of these intervals of sound of the first, fourth and sixth interval of sound is termed as “Major tone” the second and fifth is termed as “minor tone” and the third and seventh is termed as “semi tone” the ratio of the interval of sound of “major tone” is 9/8. That of “minor tone” is 10/9 and that of “Semi tone” 16/15. It can also be sai that the interval of sound their “major tone” is equal to four shrutis, that of “minor tone” is equal to three shrutis and that of “Semi tone” is equal to two shrutis.

Tri tal (Tin tal)

Taal signs	x	2	0	3
Maatra	1 2 3 4	5 6 7 8	9 10 11 12	1314 15 16
Bols	Dha Dhin Dhin Dha	DhaDhin Dhin Dha	Dha Thin Thin Tha	Dha DhinDhin Dha

Ektal

Taal signs	x	0	2	0	3	4
Maatra	1 2	3 4	5 6	7 8	9 10	11 12
Bols	Dhin Dhin	DhageTirikita	Thu Na	Kath Tha	DhageTirikita	Dhi Na

Jap tal

Taal signs	x	2	0	3
Maatra	1 2	3 4 5	6 7	8 9 10
Bols	Dhi Na	Dhi Dhi Na	Thi Na	Thi Thi Na

Kherva Tal

Taal signs	x	0
Maatra	1 2 3 4	5 6 7 8
Bols	Dha Ge Na Ka	Na Ka Dhi Na

Taal signs	x	0	2	0	3	4

Maatra	1 2	3 4	5 6	7 8	9 10	11 12
Bols	Dha Dha	Dhin Dha	TiNa	Dhin Dha	Tta Katha	Gadi Gena

Chau Tal

Tilavada Tal

Taal signs	x	2	0	3
Maatra	1 2 3 4	5 6 7 8	9 10 11 12	1314 15 16
Bols	Dha Thirikita Dhin -Dhin	DhaDha Thin Thin	Tha Thirikia Dhin -Dha	Dha Dha Dhin Dhi

Dhamar Tal

Taal signs	x	2	0	3
Maatra	1 2 3 4 5	6 7	8 9 10	11 12 13 14
Bols	Ka Dhi Ta Dhi Ta	Dha __	Ge Thi Ta	Thi Ta Tha __

Dadara Tal

Taal signs	x	0
Maatra	1 2 3	4 5 6
Bols	Dha Dhi Na	Dha Tu Na

Description of Ragas

#	Raga	Arohi/Avarohi	Thata	Jathi	Vadi	S.Vadi	Pakad	Time
1	Goud-Saranga	SGRMGPMDPNDṠ/ ṠNDP,DMPG,MRPRS	Kalyan	Sampurna	G	D	S,GRMG,PR,S	Mid day.
2	Hindol	SG,M′DNDṠ/ ṠND,M′G,S	Kalyan	Audava	D	G	S,G,M′DNDM′GS	First quarter of the day.
3	Shankara	SGP,NDṠ/ ṠNP,ND, ṠNP,GP,GS	Bilawal	Audava-Shasdava	G	N	Ṡ,NP,ND, Ṡ,NP,GP.GS	Second quarter of the night.
4	Jaijaiwanti	SRR,RGRS,ṆḌṖR,GMP,NṠ ṠNDP,DM.RGRS	Khamaj	Sampurna	R	P	RGRS,ṆḌṖ,R	Last part of the second quarter of the night.
5	Pooriya Dhanashri	ṆRGM′P,DP, NṠ/ṘNDP,M′G, M′RGRS.	Poorvi	Sampurna	P	R	ṆSRG, M′PDP, M′G,M′RG,DM′G,RS	Evening time
6	Paraj	ṆSG, M′D NṠ/ Ṡ,NDP,M′PDP,GMG, M′GRS	Poorvi	Sampurna	S	P	Ṡ,NDP,M′PDPGMG, M′G,RS	Last quarter of the night.
7	Shri	SRRS,S,R,M′P,N Ṡ/ Ṡ,NDP,M′GR,GRRS	Poorvi	Audava-Shasdava	R	P	SRRS,P, M′GR,GRRS	Sunset time.
8	Marwa	SR,G, M′D,N Ṡ/ ṠND, M′GRS	Marwa	Shasdava	R	D	D,M′GR,GM′G,RS	Last quarter of the day.

#	Raga	Arohi/Avarohi	Thata	Jathi	Vadi	S.Vadi	Pakad	Time
9	Kalingada	SRGM,PD NṠ/ ṠNDP,MGRS	Bhairawa	Sampurna	P	S	DPGMG,Ṇ,SRG,M	Last quarter of the day.
10	Adana	SRGMP,DNṠ/ ṠDNPMP,GM,RS	Asawari	Sampurna Shadava	S	P	ṠDNṠ,D,NPMP,GM,P S	Third quarter of the night.
11	Bahar	ṆSGM,PGM,D,NṠ/Ṡ,NP,MP, GM,RS	Kaphi	Shadava	M	S	MPGM,D,NṠ	Mid-night.
12	Goud Malhar	SRM,P,DṠ/ṠNP,MPGM,RS	Khamaj	Sampurna	M	S	RGRMGRS,PMPDṠDP M	Mid-day.
13	Miyan Malhar	SRMRS,RP,NDNṠ/ṠNP,MP, GM,RS	Kaphi	Sampurna Shadava	M	S	RMRS,ṆṖṂṖ,ṆḌ,ṆS, P,GMRS	Mid-night.

THAL JUP

1 2	3 4 5	6 7	8 9 10
DI NA	DI DI NA	TI NA	DI DI NA
X	2	O	3

THAL JUP - DUGUN

1 2	3 4 5	6 7	8 9 10
DINA DIDI	NATI NADI DINA	DINA DIDI	NATI NADI DINA
X	2	O	3

THAL JUP - THUGUN

1 2	3 4 5	6 7	8 9 10
DINADI DINATI	NADIDI NADINA DIDINA	TINADI DINADI	NADIDI NATINA DIDINA
X	2	O	3

THAL JUP - CHAUGUN

1 2	3 4 5	6 7	8 9 10
DINADIDI NATINADI	DINADINA DIDINATI NADIDINA	DINADIDI NATINADI	DINADINA DIDINATI NADIDINA
X	2	O	3

THAL DADHARA

1 2 3	4 5 6
DA DI NA	DA TU NA
X	O

THAL DHDHARA - DUGUN

1 2 3	4 5 6
DADI NA DA TUNA	DADI NA DA TUNA
X	O

THAL DADHARA - TUGUN

1 2 3	1 2 3
DADINA DATUNA DADINA	DATUNA DADINA DATUNA
X	O

THAL DADHARA - CHAUGUN

1 2 3	4 5 6
DADINADA TUNADADI NADATUNA	DADINADA TUNADADI NADATUNA
X	O