PHONETICS: DESCRIPTION AND CLASSIFICATION
OF SPEECH SOUNDS

2 PHONETIC DESCRIPTION

The speech sounds are produced by the interaction of speech organs. Different criteria are followed for the description and classification of the speech sounds. We can describe these speech sounds according to their production, transmission and reception. But for our purpose a detailed description of speech sounds providing information from three different stages may be irrelevant. For the purpose of language teaching, emphasis is, therefore, given on the description of speech sounds according to their production or articulation.
Primarily, the speech sounds can be divided on the basis of the mechanism involved in their production. Thus, we get primarily two divisions, namely, vowel and consonant. The speech sounds, which are produced by the air passing through the mouth in a continuous stream without any obstruction in the mouth, are known as vowel sounds. The consonant sounds are those speech sounds which are produced by the air obstructed either completely or partially at various points in the mouth cavity. Thus, every speech sound of Bengali and Oriya falls into either vowel or consonant division.

2.1 THE VOWEL SOUNDS

Vowel sounds in Bengali and Oriya, as in other languages, are normally made with a voiced egressive air stream without any closure or narrowing in the vocal tract which acts as a resonance chamber.

In order to give an articulatory description and classification of vowel sounds used in both Bengali and Oriya, the following mechanisms are primarily observed:

1) the position of soft palate,
2) the part of tongue raised and the degrees of raising,
3) the movement of lips, i.e., the degrees of spreading or rounding,
4) the length or duration of production, and
5) the syllabicity.
2.1.1 ORAL AND NASALIZED

The position of the soft palate produces two different kinds of vowel sounds, namely, oral and nasalized. If the soft palate is raised to close the nasal passage and the air passes only through the mouth cavity, the vowel sounds produced are called oral vowels. There are seven such oral vowel sounds in Bengali. They are \( \left[ i, e, æ, a, o, u \right] \) and \( \left[ u \right] \). In Oriya, such oral vowels number six. They are \( \left[ i, æ, a, o, u \right] \) and \( \left[ u \right] \).

When the soft palate is lowered to allow the air also to pass through the nasal passage, the vowel sounds produced are called nasalized vowels. The number of nasalized vowel in Bengali is seven. They are \( \left[ ñ, ñ, ñ, ñ, ñ, ñ, ñ \right] \) and \( \left[ ñ \right] \). In Oriya, there are six nasalized vowels. They are \( \left[ ñ, ñ, ñ, ñ, ñ, ñ \right] \) and \( \left[ ñ \right] \).

Vowels in Bengali and Oriya when associated with a nasal sound are also slightly nasalized (see Chatterji, 1986, p.19 and Pattanayak and Das, 1972, p.3).

2.1.2 FRONT AND BACK

The part of the tongue which plays an important role in the production of vowel sounds differentiates between two classes. One is front, in the production of which only the front part of the tongue plays its role. In Bengali, there are three front vowels. They are \( \left[ i, e \right] \) and \( \left[ æ \right] \). In Oriya, there are only two \( \left[ i \right] \) and \( \left[ e \right] \).
The other class of vowel sounds is back. When the back part of the tongue plays its role in the production of vowel sounds, they are called back vowels. There are three back vowels each in Bengali and Oriya. They are \( \text{u}, \text{o} \) and \( \text{O} \).

In traditional analysis the vowel sound \( \text{a} \) in both Bengali and Oriya is considered as a central vowel as the central or middle part of the tongue plays its role in the production of the same.

2.1.3 HIGH AND LOW

There are high as well as low vowels both in Bengali and Oriya. Bengali and Oriya have two high vowels each. They are \( \text{i} \) and \( \text{u} \). In the production of these vowel sounds the part of the tongue is raised to the maximum height in the mouth cavity. So they are called high vowels.

On the other hand, in the production of a low vowel the tongue remains in the lowest position in the mouth cavity. The number of low vowel in Bengali and Oriya is one, that is \( \text{a} \).

There may be a number of vowels occurring in between both extremes. Such is the case in Bengali and Oriya. Bengali vowels \( \text{e}, \text{ae}, \text{o} \) and \( \text{O} \) as well as Oriya vowels \( \text{e}, \text{o} \) and \( \text{O} \) are neither fully high nor fully
low. In Bengali and Oriya vowels /i e j and /o j are nearer to high and /o j is nearer to low. Thus, these are described as mid-high and mid-low respectively. In addition, Bengali vowel /a æ j is also nearer to low, hence it is considered as mid-low.

2.1.4 UNROUNDED AND ROUNDED

The movement of the lips i.e., degrees of spreading or rounding is considered in the description of vowel sounds. As a result, we find a contrast between the vowel sounds. The vowel sounds which are produced with different degrees of spreading of lips are termed as unrounded. In Bengali, there are three unrounded vowels, viz., /i, e j and /æ j whereas in Oriya, there are two unrounded vowels, viz., /i j and /e j.

Rounded vowels are those in the production of which there are different degrees of lip rounding. Such rounded vowels are three each in Bengali and Oriya. They are /u, o j and /ɔ j.

2.1.5 CLOSE AND OPEN

Apart from the position of the tongue, another aspect that of the lip movement is taken into consideration to describe the vowel sounds in terms of openness of the mouth cavity.
Thus, we get close and open vowels. In Bengali and Oriya, \( \text{i} \) and \( \text{u} \) are described as close vowels and \( \text{a} \) as an open vowel.

There may be a number of vowels occurring in between both extremes. Such is the case in Bengali and Oriya. Bengali vowels \( \text{e, æ, o} \) and \( \text{ɔ} \) as also the Oriya vowels \( \text{e, o} \) and \( \text{ɔ} \) are neither fully close nor fully open. In Bengali and Oriya, vowels \( \text{e} \) and \( \text{o} \) are nearer to close and \( \text{ɔ} \) is nearer to open. Thus, these are described as half-close and half-open respectively. In addition, Bengali vowel \( \text{æ} \) is also nearer to open, hence it is considered as half-open.

2.1.6 SHORT AND LONG

Vowel sounds are also distinguished by their duration or length. This duration or length of sounds is described as quantity. The duration or length of sounds is measured by using instruments. A trained ear can also help in perceiving length of sounds. Bengali and Oriya have length in vowels but not as a significant feature. Different views are found among scholars about length feature in both the languages. Chatterji (1986, p.21) and Sen (1975, p.23) have suggested three types of length in Bengali, viz., long, half-long and short. Pattanayak and Das (1972, p.1) have suggested two types of length in Oriya, viz., short and long.
Phonetically, there may be different shades of length of vowels in both the languages. But generally, two types of duration or length in vowels are perceived both in Bengali and Oriya. The syllable in which a vowel sound occurs, is often considered as the determining factor for the length of the vowel. A Bengali vowel is long when it occurs in closed monosyllables whereas an Oriya vowel is long when it occurs in monosyllables be it open or close. Short vowels in both the languages occur except in the positions where long vowels occur in both the languages. So, in Bengali and Oriya, all the oral vowels may be short or long depending upon the syllable in which they occur.

2.1.7 SYLLABIC AND NON-SYLLABIC

Jones (1979, p.55) has described that 'each sound which constitutes a peak of prominence is said to be syllabic'. He has also commented that 'the syllabic sound of a syllable is generally a vowel, but consonants may also be syllabic'. All the oral and nasalized vowels in Bengali and Oriya are syllabic but no consonant in these languages is syllabic.

On the other hand, both the languages have some vowels which do not constitute peaks of prominence. Such non-syllabic vowels are four in Bengali viz., \( \tilde{I}, \tilde{e}, \tilde{u} \) and \( \tilde{p} \) and two in Oriya, viz., \( \tilde{A} \) and \( \tilde{u} \). These non-
syllabic vowels generally occur as the second members in diphthongs of both the languages.

2.2 BENGALI VOWEL SOUNDS

There are altogether twenty five predominant vowel sounds in Bengali. These vowel sounds have four way distinctions in the vertical axis, such as, high, mid-high, mid-low and low on the one hand and on the other close, half-close, half-open and open. In the horizontal axis the vowel sounds have three way distinctions, such as front, central and back. The front and central vowel sounds are unrounded. The back vowel sounds are rounded. The vowel sounds are distinguished, generally, with two degrees of length, such as short and long. They are distinguished as oral and nasalized and also as syllabic and non-syllabic.

The predominant Bengali vowel sounds are classified and presented in a tabular form below:
Table - 1

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th>Central</th>
<th>Back</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Unrounded</td>
<td>Unrounded</td>
<td>Rounded</td>
</tr>
<tr>
<td>High</td>
<td>( \tilde{i} )</td>
<td>( \tilde{u} )</td>
<td>( \tilde{u} ) Close</td>
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<td>Mid-high</td>
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<td>( o )</td>
<td>Half-close</td>
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<td>( e )</td>
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<td>Mid-low</td>
<td>( \tilde{e} )</td>
<td>( \tilde{o} )</td>
<td>Half-open</td>
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<tr>
<td></td>
<td>( \tilde{e} )</td>
<td>( \tilde{o} )</td>
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<tr>
<td>Low</td>
<td>( a )</td>
<td>( a )</td>
<td>Open</td>
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<tr>
<td></td>
<td>( \tilde{a} )</td>
<td>( \tilde{a} )</td>
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</tr>
</tbody>
</table>

2.2.1 DESCRIPTION AND OCCURRENCE OF BENGALI VOWEL SOUNDS

\[ \tilde{i} \] - It is a high front unrounded nasalized close vowel occurring in all the positions of words. e.g.,
\[ \tilde{iiT} \]'brick', \[ \tilde{giiT} \]'knot', \[ \tilde{ro\tilde{s}i} \]'ray'.

\[ i: \] - It is a high front unrounded long oral close vowel occurring in a closed monosyllabic word. e.g.,
\[ i:\tilde{e} \]'interjection', \[ \tilde{ti:n} \]'three'.

\[ i \] - It is a high front unrounded short oral close vowel occurring in all the positions except in a closed monosyllabic word. e.g.,
\[ \tilde{itihs\tilde{a}} \]'history', \[ \tilde{k\tilde{is}or} \]'young', \[ \tilde{no\tilde{d}i} \]'river'.
\[\text{i} \quad \text{It is a high front unrounded non-syllabic oral close vowel occurring as a second element in combination with the vowel sounds } [i, e, a, o] \text{ and } [u]. \text{ e.g., } [\text{ni}] \text{ 'I take'}, [\text{sel}] \text{ 'that'}, [\text{pai}] \text{ 'I get'}, [\text{dai}] \text{ 'curd'}, [\text{ui}] \text{ 'white ant'}.

\[\text{ɛ} \quad \text{It is a mid-high front unrounded nasalized half-close vowel occurring in all the positions of words. e.g., } [\text{eto}] \text{ 'left over after eating'}, [\text{tetro}] \text{ 'tamarind'}, [\text{he he}] \text{ 'a kind of laughing'}.\]

\[\text{ɛt} \quad \text{It is a mid-high front unrounded long oral half-close vowel occurring in a closed monosyllabic word. e.g., } [\text{er}] \text{ 'his (non-hon., prox.)'}, [\text{phe}] \text{ 'again'}.\]

\[\text{ɛ} \quad \text{It is a mid-high front unrounded short oral half-close vowel occurring in all the positions of words except in a closed monosyllabic word. e.g., } [\text{er}] \text{ 'they (non-hon., prox.)'}, [\text{chele}] \text{ 'a boy'}.\]

\[\text{ɛ} \quad \text{It is a mid-high front unrounded non-syllabic oral half-close vowel occurring as a second element in combination with the vowel sounds } [e, æ, a, o] \text{ and } [o]. \text{ e.g., } [\text{meg}] \text{ 'a girl'}, [\text{dæg}] \text{ 'gives'}, [\text{caæ}] \text{ 'wants'}, [\text{bheæ}] \text{ 'fear'}, [\text{doæ}] \text{ 'washes'}.\]
- It is a mid-low front unrounded nasalized half-open vowel occurring in all the positions of words. e.g., \[\text{æka- bæka}\] 'zig-zag', \[\text{pæc}\] 'screw', \[\text{hæ}\] 'yes'.

- It is a mid-low front unrounded long oral half-open vowel occurring in a closed monosyllabic word. e.g., \[\text{æk}\] 'one', \[\text{bæŋ}\] 'frog'.

- It is a mid-low front unrounded short oral half-open vowel occurring in all the positions of words except in a closed monosyllabic word. e.g., \[\text{æ ka}\] 'alone', \[\text{dæ kha}\] 'seen', \[\text{chæ}\] 'fie'.

- It is a low unrounded central nasalized open vowel occurring in all the positions of words. e.g., \[\text{ac}\] 'ignition', \[\text{khæ}\] 'fold', \[\text{bæ}\] 'left'.

- It is a low unrounded central long oral open vowel occurring in a closed monosyllabic word. e.g., \[\text{a:T}\] 'eight', \[\text{sæt}\] 'seven'.

- It is a low unrounded central short oral open vowel occurring in all the positions of words except in a closed monosyllabic word. e.g., \[\text{aTa}\] 'a kind of wheat product', \[\text{tæra}\] 'a star'.

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\( \tilde{\text{u}} \) - It is a high back rounded nasalized close vowel occurring in all the positions of words. e.g., \( \tilde{\text{ucu}} \) 'high', \( \tilde{\text{puj}} \) 'puss', \( \tilde{\text{phu}} \) 'puff of air'.

\( \text{u} \) - It is a high back rounded long oral close vowel occurring in a closed monosyllabic word. e.g., \( \text{u:t} \) 'camel', \( \text{bhu:u} \) 'mistake'.

\( \text{u} \) - It is a high back rounded short oral close vowel occurring in all the positions of words except in a closed monosyllabic word. e.g., \( \text{wdi} \) 'proper', \( \text{khu:si} \) 'happy', \( \text{guru} \) 'preceptor'.

\( \text{\text{u}} \) - It is a high back rounded non-syllabic oral close vowel occurring as a second element in combination with the vowel sounds \( \text{i} \), e.g., \( \text{uli} \) 'a kind of flower', \( \text{keu} \) 'any one', \( \text{lau} \) 'white gourd', \( \text{bou} \) 'wife'.

\( \text{\text{oi}} \) - It is a mid high back rounded nasalized half-close vowel occurring in all the positions of words. e.g., \( \text{ora} \) 'those persons (hon.)', \( \text{khoj} \) 'search', \( \text{go} \) 'obstinate, insistence'.

\( \text{\text{oi}} \) - It is a mid-high back rounded long oral half-close vowel occurring in a closed monosyllabic word. e.g., \( \text{ol} \) 'arum root', \( \text{co:r} \) 'a thief'.

- It is a mid-high back rounded short oral half-close vowel occurring in all the positions of words except in a closed monosyllabic word. e.g., 
\[\text{o} \] 'much', \[\text{ot} \] 'flow', \[\text{bu} \] 'good'.

- It is a mid-high back rounded non-syllabic oral half-close vowel occurring as a second element in combination with the vowel sounds \[\text{ae} \] a, \[\text{ao} \] and \[\text{o} \] e.g., \[\text{maao} \] 'mew', 'call of cat', \[\text{khaao} \] '(you) eat', \[\text{naao} \] '(you) are not', \[\text{dhoaaa} \] '(you) wash'.

- It is a mid-low back rounded nasalized half-open vowel occurring only word medially. e.g., 
\[\text{god} \] 'gum'.

- It is a mid-low back rounded oral half-open long vowel occurring in a closed monosyllabic word. e.g., \[\text{jooi} \] 'water'.

- It is a mid-low back rounded short oral half-open vowel occurring in all the positions of words except in a closed monosyllabic word. e.g., 
\[\text{nek} \] 'much', \[\text{kotta} \] 'talk'. \[\text{co} \] 'you go'.

In Oriya, there are twenty predominant vowel sounds in total. In the horizontal axis, these vowel sounds have three way distinctions, such as, front, central and back. The front and central vowel sounds are unrounded. The back vowel sounds are rounded.

In the vertical axis, the vowel sounds have four way distinctions, such as, high, mid high, mid-low and low on the one hand and close, half-close, half-open and open on the other. The vowel sounds of Oriya are distinguished as oral and nasalized and also as syllabic and non-syllabic. These vowel sounds are also distinguished, generally, with two degrees of length such as, short and long.

The predominant Oriya vowel sounds are classified and presented in a tabular form below:

Table - 2

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
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<td>Unrounded</td>
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<td>Mid-high</td>
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<td>~ o o: Half close</td>
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<tr>
<td>Mid-low</td>
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<td>~ ~ o: Half open</td>
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<tr>
<td>Low</td>
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<td>a at: Open</td>
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</table>
2.3.1 DESCRIPTION AND OCCURRENCE OF OKINYA VOWEL SOUNDS

\[\{ \text{i} \} \] - It is a high front unrounded nasalized close vowel occurring in all the positions of words. e.g., \( \text{\textit{ic\text{\textth}}}} \) 'inch', \( \text{\textit{b\text{\textth}}isi} \) 'flute', \( \text{\textit{k\text{\textth}}i} \) 'where'.

\[\{ \text{i} \} \] - It is a high front unrounded long oral close vowel occurring only in a monosyllabic word. e.g., \( \text{\textit{li\text{\textth}}kh\text{\textth}} \) 'you write', \( \text{\textit{phi\text{\textth}}} \) 'each'.

\[\{ \text{i} \} \] - It is a high front unrounded short oral close vowel occurring in all the positions of words except in monosyllabic words. e.g., \( \text{\textit{Ti\text{\textth}}a} \) 'brick', \( \text{\textit{din\text{\textth}}y} \) 'day', \( \text{\textit{bo\text{\textth}}hi} \) 'book'.

\[\{ \text{i} \} \] - It is a high front unrounded non-syllabic oral close vowel occurring as a second element in combination with the vowel sounds \( \{\text{e, a, o}\} \) and \( \{\text{u}\} \) e.g., \( \text{\textit{he\text{\textth}di}} \) 'has become', \( \text{\textit{ba\text{\textth}Ni}} \) 'brother', \( \text{\textit{po\text{\textth}ta}} \) 'sacred thread', \( \text{\textit{mo\text{\textth}la}} \) 'dirt', \( \text{\textit{au\text{\textth}Ta}} \) 'two'.

\[\{ \text{e} \} \] - It is a mid high front unrounded nasalized half-close vowel occurring word medially and word finally. e.g., \( \text{\textit{pe\text{\textth}kali}} \) 'reed instrument', \( \text{\textit{dha\text{\textth}e}} \) 'runs'.

\[\{ \text{e} \} \] - It is a mid high front unrounded long oral half-close vowel occurring in monosyllabic words. e.g., \( \text{\textit{de\text{\textth}kh\text{\textth}}}(\text{you} \text{ see})', \( \text{\textit{de\text{\textth}}}(\text{you} \text{ give})'.
\[ e \] - It is a mid-high front unrounded short oral half-close vowel occurring in all the positions of words except in monosyllabic words. e.g., eka 'alone', cheh 'goat', ebe 'now'.

\[ a \] - It is a low unrounded central nasalized open vowel occurring in all the positions of words. e.g., "as" 'fibre', "kaala" 'cloudy weather', "ge" 'village'.

\[ ai \] - It is a low unrounded central long oral open vowel occurring in monosyllabic words. e.g., "asN" '(you) bring', "baRh" '(you) serve food', "ga" '(you) sing'.

\[ a \] - It is a low unrounded central short oral open vowel occurring in all the positions of words except in monosyllabic words. e.g., "aji" 'today', "kali" 'tomorrow', "luha" 'iron'.

\[ u \] - It is a high back rounded nasalized close vowel occurring in all the positions of words. e.g., "uca" 'height', "baus" 'bamboo', "mu" 'I'.

\[ u \] - It is a high back rounded long oral close vowel occurring in monosyllabic words. e.g., "u:Th" '(you) wake up', "bu:jh" '(you) enquire', "bhus" 'earth'.

\[u\] - It is a high back rounded short oral close vowel occurring in all the positions of words except in monosyllabic words. e.g., \[\text{upar} \text{ } \text{upper}\], \[\text{musa} \text{ } \text{mouse}\], \[\text{s\text{bu}} \text{ } \text{everything}\].

\[u\] - It is a high back rounded non-syllabic oral close vowel occurring as a second element in combination with the vowel sounds \[i, e, a, o, j\] and \[o\]. e.g., \[\text{piusa} \text{ } \text{father's sister's husband}\], \[\text{deuNu} \text{ } \text{(you) give}\], \[\text{maysi} \text{ } \text{mother's sister}\], \[\text{p\text{ysc}o} \text{ } \text{name of a month}\], \[\text{kou\text{ti}} \text{ } \text{where}\].

\[\text{o}\] - It is a mid high back rounded nasalized half-close vowel occurring word medially and word finally. e.g., \[\text{jo\text{i}} \text{ } \text{son-in-law}\], \[\text{po\text{s}} \text{ } \text{sound made by conch shell}\].

\[o:\] - It is a mid high back rounded long oral half-close vowel occurring in monosyllabic words. e.g., \[\text{tho} \text{ } \text{(you) place}\], \[\text{po\text{ich}} \text{ } \text{(you) wipe off}\].

\[o\] - It is a mid high back rounded short oral half-close vowel occurring word initially and word medially except in monosyllabic words. e.g., \[\text{oTho} \text{ } \text{lip}\], \[\text{moTa} \text{ } \text{fat}\].

\[\text{o}\] - It is a mid low back rounded nasalized half-open vowel occurring in all the positions of words. e.g., \[\text{s\text{c}} \text{ } \text{share}\], \[\text{n\text{y}} \text{ } \text{yes}\], \[n\text{sc} \text{ } \text{swan}\].
\[ \text{It is a mid-low back rounded long oral half-open vowel occurring in monosyllabic words. e.g.,} \]
\[ [\text{ro:kh}]'(you) \text{ keep'}; [\text{no:}]'\text{nine}' \]

\[ \text{It is a mid-low back rounded short oral half-open vowel occurring in all the positions of words except in monosyllabic words. e.g.,} \]
\[ [\text{a da}]'\text{ginger'}; [\text{K:la}]'(he) \text{ did'}; [\text{hat:}]'\text{hand'} \]

2.4 COMPARISON OF BENGALI AND ORIYA VOWEL SOUNDS

The vowel sounds of Bengali and Oriya are compared with reference to cardinal vowels. Hence, for this purpose, three quadri-lateral vowel diagrams are presented below consulting Jones (1979) for cardinal vowel diagram. Chatterji (1986) for Bengali vowel diagram and Dhat (1966) for Oriya vowel diagram.

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Cardinal vowels  Bengali vowels  Oriya vowels
From the above three diagrams the tongue positions of Bengali and Oriya vowel sounds are compared in relation to those of cardinal vowels.

The position of the tongue for the vowel $\langle i \rangle$ in Bengali and Oriya is slightly below half-way between the cardinal vowel no. 1 $\langle i \rangle$ and the cardinal vowel no. 2 $\langle e \rangle$ and the tongue is also retracted from the cardinal position of the front. The non-syllabic $\langle i \rangle$ in both these languages is produced in the similar way as the vowel $\langle i \rangle$. The vowels $\langle i: \rangle$ and $\langle i \rangle$ in Bengali and Oriya are higher than the corresponding short one but lower than cardinal vowel no.1 $\langle i \rangle$.

The vowel $\langle e \rangle$ in both the languages is above half-way between the cardinal vowel no. 2 $\langle e \rangle$ and the cardinal vowel no. 3 $\langle e \rangle$. In Bengali the vowel $\langle e \rangle$ is along the cardinal line whereas in Oriya the same is retracted from the cardinal line. The non-syllabic $\langle e \rangle$ in Bengali, absent in Oriya, is produced in the same manner as the vowel $\langle e \rangle$. The vowels $\langle e: \rangle$ and $\langle e \rangle$ are higher than the vowel $\langle e \rangle$ in respective languages but lower than the cardinal vowel no.2 $\langle e \rangle$.

In Bengali, the vowel $\langle e \rangle$ is higher than the cardinal vowel no. 4 $\langle a \rangle$ but lower than the cardinal vowel no. 3 $\langle e \rangle$. The vowels $\langle e: \rangle$ and $\langle e \rangle$ are higher than Bengali $\langle e \rangle$ but lower than the cardinal vowel no. 3 $\langle e \rangle$. The vowels $\langle e \rangle$, $\langle e: \rangle$ and $\langle e \rangle$ are not found in Oriya.
The vowel \( \hat{\text{a}} \) in Bengali is about half-way between the cardinal vowel no. 4 \( \hat{\text{a}} \) and the cardinal vowel no. 5 \( \hat{\text{a}} \). It is a little advance towards the cardinal vowel no. 4 \( \hat{\text{a}} \), whereas \( \hat{\text{a}} \) and \( \hat{\text{a}} \) are retracted towards the cardinal vowel no. 5 \( \hat{\text{a}} \). In Oriya, the vowels \( \hat{\text{a}} \) and \( \hat{\text{a}} \) are half-way between the cardinal vowel no. 4 \( \hat{\text{a}} \) and the cardinal vowel no. 5 \( \hat{\text{a}} \). The vowel \( \hat{\text{a}} \) in Oriya is higher than the corresponding long one.

The vowels \( \hat{\text{a}} \) and \( \hat{\text{a}} \) in Bengali and Oriya are slightly lower than the cardinal vowel no. 6 \( \hat{\text{a}} \) and the vowel \( \hat{\text{a}} \) is almost half-way between the cardinal vowel no. 5 \( \hat{\text{a}} \) and the cardinal vowel no. 6 \( \hat{\text{a}} \). In the production of this \( \hat{\text{a}} \) the tongue is retracted in Bengali whereas in Oriya it is advanced or forwarded towards central position.

In Bengali and Oriya, the vowel \( \hat{\text{a}} \) is about half-way between the cardinal vowel no. 7 \( \hat{\text{a}} \) and the cardinal vowel no. 6 \( \hat{\text{a}} \). However, in Oriya, the tongue is advanced towards central position whereas in Bengali, it is retracted.

The vowels \( \hat{\text{a}} \) and \( \hat{\text{a}} \) are higher than the vowel \( \hat{\text{a}} \) in respective languages but lower than the cardinal vowel no. 7 \( \hat{\text{a}} \). The nonsyllabic \( \hat{\text{a}} \) in Bengali, not found in Oriya, is produced in the same manner as \( \hat{\text{a}} \) in Bengali.

The vowel \( \hat{\text{u}} \) in Bengali and Oriya, is below half-way between the cardinal vowel no. 8 \( \hat{\text{u}} \) and the cardinal
vowel no.7 \( \text{o} \) and is also slightly advanced towards central position. The Bengali and Oriya non-syllabic \( \text{u} \) is produced as the \( \text{u} \) of these languages. The vowels \( \text{u} \) and \( \text{u} \) in both Bengali and Oriya, are higher than their corresponding short ones but lower than the cardinal vowel no.8 \( \text{u} \).

In the light of the preceding discussion it is evident that Bengali possesses twenty-five vowel sounds whereas Oriya possesses only twenty. The Bengali is characterized by five vowel sounds which are not found in Oriya. The other vowel sounds of Bengali and Oriya which strictly reveal a marginal difference only on a theoretical level are often realized as similar in speech continuum. The term 'similar' is used to indicate that the substitution of Bengali vowel sounds by Bengali speakers in speaking Oriya or the substitution of Oriya vowels by Oriya speakers while speaking Bengali creates no problem.

2.4.1 THE VOWEL SOUNDS SIMILAR IN BENGALI AND ORIYA

There are twenty vowel sounds in both the languages which are similar. Despite their marginal differences the vowel sounds which are realized as similar are given below in a tabular form:
### Table - 3

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th>Central</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>unrounded</td>
<td>unrounded</td>
<td>rounded</td>
</tr>
<tr>
<td>High</td>
<td>i</td>
<td>iː</td>
<td>u</td>
</tr>
<tr>
<td></td>
<td>i</td>
<td>iː</td>
<td>u</td>
</tr>
<tr>
<td>Mid-high</td>
<td>əː</td>
<td>əː</td>
<td>ə əː</td>
</tr>
<tr>
<td>Mid-low</td>
<td>e</td>
<td>eː</td>
<td>ə</td>
</tr>
<tr>
<td>Low</td>
<td>a</td>
<td>əː</td>
<td>ə</td>
</tr>
</tbody>
</table>

2.4.2 THE VOWEL SOUNDS DIFFERENT IN BENGALI

There are five vowel sounds which are specific to Bengali. These vowel sounds, which are not found in Oriya, are indicated in the following table:

### Table - 4

<table>
<thead>
<tr>
<th></th>
<th>Front</th>
<th>Central</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>unrounded</td>
<td>unrounded</td>
<td>rounded</td>
</tr>
<tr>
<td>Mid-high</td>
<td>əː</td>
<td>əː</td>
<td>ə</td>
</tr>
<tr>
<td>Mid-low</td>
<td>əː</td>
<td>əː;</td>
<td>ə</td>
</tr>
</tbody>
</table>
2.5 THE CONSONANT SOUNDS

The consonant sounds, in Bengali and Oriya, which are normally made with an egressive air stream, are characterized by constriction, accompanied by some measure of friction or closure followed by release.

From the articulatory point of view, consonant sounds, used in both Bengali and Oriya, can be described and classified in terms of four points as discussed below:

1) The point or place of articulation,
2) The way or manner of articulation,
3) The activity of the vocal cords, and
4) The nature of the release.

2.5.1 THE POINT OR PLACE OF ARTICULATION

Following are the main points or places of articulation with special reference to Bengali and Oriya consonant sounds:

i) Bilabial - Both the upper lip and lower lip are the main articulators in producing these sounds. Bengali has five such sounds, viz. /p, ph, b, bh, m/. Oriya has also five bilabial sounds. They are /p, ph, b, bh, m/.

ii) Dental - While producing these sounds the tip of the tongue touches the back or edge of the upper teeth. Bengali and Oriya have six dental sounds each, i.e. /t, th, d, dh, n, s/.
iii) Alveolar - The tip or blade of the tongue touches the alveolar ridge in producing these sounds. There are three alveolar sounds in Bengali and Oriya such as \( n \), \( l \) and \( r \).

iv) Retroflex - To articulate these sounds the tip of the tongue is curled back and touches the hard palate. Such sounds are numbered to eight in Bengali. They are \( T \), \( Th \), \( D \), \( Dh \), \( N \), \( L \), \( R \) and \( Rh \). Oriya has all the eight retroflex sounds that Bengali has. In addition, Oriya has one more retroflex flapped nasal that is \( Nh \).

v) Palato-alveolar - The front part of the tongue raises towards hard palate and articulates with the alveolar ridge. Bengali has six palato-alveolar sounds. They are \( c \), \( ch \), \( j \), \( jh \), \( n \) and \( s \). Oriya has five such sounds. They are \( C \), \( Ch \), \( J \), \( Jh \) and \( N \).

vi) Vellar - In producing these sounds the back part of the tongue touches the soft palate. There are five velar sounds each in Bengali and Oriya. They are \( k \), \( kh \), \( g \), \( gh \) and \( y \).

vii) Glottal - In producing these sounds an obstruction or a narrowing causes friction but not vibration between the vocal cords. Bengali and Oriya have two glottal sounds each. They are \( h \) and \( Nh \).
2.5.2 THE WAY OR MANNER OF ARTICULATION

The obstruction made by the vocal organs may be total, partial, or simply a narrowing to cause friction. Following are the main types of articulation described in terms of degrees of closure:

a) Stop - A total closure for a moment at some point in the tract produces stop sounds. Both Bengali and Oriya have sixteen stop sounds each. They are \( p, ph, b, bh, t, th, d, dh, T, Th, D, Dh, k, kh, g, g \) and \( gh \).

b) Affricate - In producing this kind of sounds the air stream is completely closed for a moment at some point in the mouth and the separation of the organs is slow in comparison with that of a stop. There are four affricates each in Bengali and Oriya. They are \( c, ch, j, jh \).

c) Nasal - The nasal sounds are also produced with a complete closure for a moment at some point in the mouth but at the same time the soft palate is lowered, so that the air escapes through the nose. Bengali has six nasal sounds, viz. \( m, n, n, \tilde{n}, \tilde{n} \) and \( \tilde{n} \). Oriya has all the six nasal sounds, that Bengali has, plus one that is \( \tilde{R} \). This is a flapped nasal.

d) Lateral - There is a partial closure at some point in the mouth in the production of this kind of sounds but the air is allowed to escape from both sides or one side of the
contact. There are two lateral sounds each in Bengali and Oriya. They are £1 and £1.

e) Trill - There is a series of rapid closures or taps in the production of a trill sound. Bengali and Oriya have one trill sound each. That is £r.

f) Flap - In the production of this sound a single tap is made at some point in the mouth. Bengali and Oriya have two flap sounds each. They are £R and £Rh.

g) Fricative - In producing this kind of sounds the air stream is forced through a narrow opening in the vocal tract, producing audible friction. Such sounds are four in Bengali, such as £s, s, h£ and £h£ whereas in Oriya, there are three, such as £s, h£ and £h£.

h) Semi-vowel - Traditionally semi-vowels are described and classified along with the consonants. From the point of view of phonetic description they are treated as vowel glides. From the functional point of view these vowel glides are consonantal in nature. Bengali has four semi-vowels £1, e, o£ and £u£ whereas Oriya has two £u£ and £u£. Both Bengali and Oriya semi-vowels occur as a second member in diphthongs. Due to such nature of these semi-vowels, they are discussed along with the vowels. However, in contradistinction to Bengali, semi-vowels can occur in Oriya in absolute initial position as a second member in cluster with a consonant. Due to such different nature another set of semi-
vowels, i.e. /y/ and /w/ in Oriya are discussed along with the Oriya consonants.

2.5.2.1 THE ACTIVITY OF THE VOCAL CORDS

While producing consonant sounds the vocal cords function in two different ways. The two types of articulation in terms of vocal cords activity are as follows:

i) Voiced - While producing some consonant sounds the vocal cords are held together loosely so that the air stream passes through causing vibration. Bengali and Oriya have commonly twenty two each voiced consonant sounds. They are /b/, /bh/, /d/, /dh/, /D/, /Dh/, /g/, /gh/, /j/, /jh/, /m/, /n/, /n̄/, /ŋ/, /l/, /r/, /R/, /R/, /R/, /Ph/, and /N̄/. In addition to these, Oriya has one more voiced consonant sound, i.e. /N̄/.

ii) Unvoiced - In the production of some consonant sounds vocal cords do not vibrate. Such unvoiced consonant sounds are numbered to thirteen in Bengali, namely, /p/, /ph/, /t/, /th/, /T/, /Th/, /k/, /kh/, /c/, /ch/, /s/, /S/ and /h/. Except /s/, all other twelve unvoiced consonant sounds are there in Oriya.

2.5.2.2 THE NATURE OF RELEASE

On the basis of the nature of air release, two types of consonant sounds are produced. One is aspirated and the other is unaspirated.
i) Aspirated - When the air is released aspirated consonants are articulated with the exhalation of extra air. Both in Bengali and Oriya, aspirated consonant sounds are eleven in number. They are \( \text{ph, bh, th, dh, Th, Dh, kh, gh, ch, jh} \) and \( \text{Rh} \). Other than these aspirated consonants, Bengali and Oriya have two aspirates \( \text{h} \) and \( \text{R} \). It is interesting to note that the aspirated stops occurring word finally are realized with very weak aspiration in Bengali.

ii) Unaspirated - There are consonant sounds produced without the exhalation of extra air. All the consonant sounds other than the aspirates and aspirated, are unaspirated. For example, Bengali and Oriya have commonly \( p, b, t, d, T, D, k, g, c, j, m, n, n, N, \tilde{n}, \eta, l, L, r, R \) and \( \text{s} \). In addition, Bengali has one more unaspirated consonant, that is, \( \text{s} \).

### 2.6 THE BENGALI CONSONANT SOUNDS

In Bengali, there are altogether thirty five consonant sounds (excluding four semi-vowels). These consonant sounds are distinguished by the points or places of articulation and the ways or the manners of articulation. By the points of articulation Bengali consonant sounds are distinguished as bilabial, dental, alveolar, retroflex, palato-alveolar, velar and glottal. They are also distinguished by manners of articulation as stop, affricate, nasal, lateral, trill, flap and
fricative. They are again distinguished as voiced, unvoiced, aspirated and unaspirated.

2.6.1 DESCRIPTION AND OCCURRENCE OF BENGALI CONSONANT SOUNDS

\[ p \] - It is a voiceless unaspirated bilabial stop occurring in all the positions of words. e.g.:
\[ p\text{an} \] 'betel leaf', \[ d\text{hopa} \] 'washerman',
\[ s\text{arp} \] 'snake'.

\[ ph \] - It is a voiceless aspirated bilabial stop occurring in all the positions of words. e.g.:
\[ ph\text{ul} \] 'flower', \[ t\text{uphan} \] 'typhoon',
\[ b\text{oroph} \] 'rice'.

\[ b \] - It is a voiced unaspirated bilabial stop occurring in all the positions of words. e.g.:
\[ b\text{aj} \] 'thunder', \[ chobi \] 'picture',
\[ k\text{hush} \] 'very'.

\[ bh \] - It is a voiced aspirated bilabial stop occurring in all the positions of words. e.g.:
\[ b\text{hat} \] 'rice (cooked)', \[ s\text{hha} \] 'meeting',
\[ la\text{bh} \] 'profit'.

\[ t \] - It is a voiceless unaspirated dental stop occurring in all the positions of words. e.g.:
\[ t\text{el} \] 'oil', \[ p\text{ata} \] 'leaf', \[ h\text{ast} \] 'hand'.
\[\text{th}\] - It is a voiceless aspirated dental stop occurring in all the positions of words. e.g., \[\text{tha:m}\]
'pillar', \[\text{ma:th}\] 'head', \[\text{ra:th}\] 'chariot'.

\[\text{d}\] - It is a voiced unaspirated dental stop occurring in all the positions of words. e.g., \[\text{da:m}\]
'rate', \[\text{nodi}\] 'river', \[\text{ro:d}\] 'sunshine'.

\[\text{dh}\] - It is a voiced aspirated dental stop occurring in all the positions of words. e.g., \[\text{dho:n}\]
'wealth', \[\text{ga:da}\] 'an ass', \[\text{ba:dh}\] 'hunter'.

\[\text{T}\] - It is a voiceless unaspirated retroflex stop occurring in all the positions of words. e.g.,
\[\text{Taka}\] 'rupee', \[\text{ru:ti}\] 'bread', \[\text{pa:t}\] 'jute'.

\[\text{Th}\] - It is a voiceless aspirated retroflex stop occurring in all the positions of words. e.g.,
\[\text{Thona}\] 'paper packet', \[\text{la:thi}\] 'a stick', \[\text{ka:th}\] 'wood'.

\[\text{D}\] - It is a voiced unaspirated retroflex stop occurring initially and also medially and finally, in loan words. e.g., \[\text{Da:n}\] 'right', \[\text{so:da}\] 'sodium carbonate', \[\text{ro:d}\] 'rod'.

\[\text{Dh}\] - It is a voiced aspirated retroflex stop occurring only word initially. e.g., \[\text{Dho:2}\] 'a kind of drum'.

\[\text{k}\] - It is a voiceless unaspirated velar stop. It
occurs in all the positions of words. e.g.,
[kh] 'ear', [s] 'call', ['s] 'k

It is a voiceless aspirated velar stop occurring in all the positions of words. e.g., [kh] 'canal', [k] 'kohn' now', ['coskh] 'eye'.

It is a voiced unaspirated velar stop occurring in all the positions of words. e.g., [g] 'round', [j] 'begun' 'brinjal', [r] 'anger'.

It is a voiced aspirated velar stop occurring in all the positions of words. e.g., [gh] 'grass', [g] 'aghat' 'stroke', [m] 'gh' 'cloud'.

It is a voiceless unaspirated palato-alveolar affricate occurring in all the positions of words. e.g., [c] 'hair', [a] 'pickle', ['kac] 'glass'.

It is a voiceless aspirated palato-alveolar affricate occurring in all the positions of words. e.g., [ch] 'picture', ['kicho] 'something', ['gasch] 'tree'.

It is a voiced unaspirated palato-alveolar affricate occurring in all the positions of words. e.g., [j] 'water', [ra] 'king', [aij] 'today'.

It is a voiceless unaspirated velar stop occurring in all the positions of words. e.g., [g] 'ear', [s] 'call', ['s] 'k

It is a voiced unaspirated palato-alveolar affricate occurring in all the positions of words. e.g., [c] 'hair', [a] 'pickle', ['kac] 'glass'.

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It is a voiced unaspirated palato-alveolar affricate occurring in all the positions of words. e.g., [j] 'water', [ra] 'king', [aij] 'today'.

It is a voiceless unaspirated velar stop occurring in all the positions of words. e.g., [kh] 'ear', [s] 'call', ['s] 'k

It is a voiced unaspirated palato-alveolar affricate occurring in all the positions of words. e.g., [c] 'hair', [a] 'pickle', ['kac] 'glass'.

It is a voiceless aspirated palato-alveolar affricate occurring in all the positions of words. e.g., [ch] 'picture', ['kicho] 'something', ['gasch] 'tree'.

It is a voiced unaspirated palato-alveolar affricate occurring in all the positions of words. e.g., [j] 'water', [ra] 'king', [aij] 'today'.
\[ \text{\textit{[jh]} - It is a voiced aspirated palato-alveolar affricate occurring in all the positions of words. e.g., [jhol] 'bag', [majhi] 'boatman', [ma:jhi] 'midst'.} \]

\[ \text{\textit{[m]} - It is a voiced unaspirated bilabial nasal occurring in all the positions of words. e.g., [ma] 'mother', [mama] 'maternal uncle', [na:m] 'name'.} \]

\[ \text{\textit{[n]} - It is a voiced unaspirated dental nasal occurring word medially either before or after dental sounds. e.g., [jotno] 'care', [sa:to] 'calm'.} \]

\[ \text{\textit{[n]} - It is a voiced unaspirated alveolar nasal occurring in all the positions of words. e.g., [nu:n] 'salt', [sona] 'gold', [ka:n] 'ear'.} \]

\[ \text{\textit{[N]} - It is a voiced unaspirated retroflex nasal occurring only word medially before retroflex stop sounds. e.g., [ghNta] 'bell', [koNtho] 'throat', [goNdar] 'rhinoceros'.} \]

\[ \text{\textit{[n]} - It is a voiced unaspirated palato-alveolar nasal occurring only word medially before palato-alveolar affricate sounds. e.g., [\text{\textit{n}}col] 'area', [ba\text{\textit{n}}cha] 'a name', [\text{\textit{n}}joli] 'offering', [jho\text{\textit{n}}jha] 'a rainy storm'.} \]

\[ \text{\textit{[\text{\textit{n}}]} - It is a voiced unaspirated velar nasal occurring word medially and word finally. e.g., [ro\text{\textit{n}}in] 'coloured', [ro\text{\textit{n}}] 'colour'.} \]
\[1\] - It is a voiced unaspirated alveolar lateral occurring in all the positions of words. e.g.,
\[\textit{lebu 'lemon'}, \textit{gola 'throat'}, \textit{la 'red'}.\]

\[2\] - It is a voiced unaspirated retroflex lateral occurring only word medially before \[T\] and \[D\]. e.g., \[\textit{ulTo 'reverse'}, \textit{DalDa 'a kind of vegetable oil'}.\]

\[3\] - It is a voiced unaspirated alveolar trill occurring in all the positions of words. e.g.,
\[\textit{raft 'night'}, \textit{aram 'comfort'}, \textit{bi 'hero'}.\]

\[4\] - It is a voiced unaspirated retroflex flap occurring word medially and word finally. e.g.,
\[\textit{bho 'big'}, \textit{saR 'bull'}.\]

\[5\] - It is a voiced aspirated retroflex flap occurring only word medially in a few words of Sanskritic origin. e.g., \[\textit{gurho 'secret'}.\]

\[6\] - It is a voiceless unaspirated dental fricative occurring always as a first member in combination with \[k, kh, t, th, p, ph, ɾ, r, ɾ\] and \[s, š\]. e.g., \[\textit{str 'beauty'}, \textit{str 'wife'}, \textit{sls 'k' a verse'}, \textit{sn 'bath'}, \textit{ski 'touch'}, \textit{sk 'shoulder'}, etc.\]
It is a voiceless unaspirated palato-alveolar fricative occurring in all the positions of words. e.g., ḯsap ḯsnake', ḯṣa ḯhope', ḯdōḍ ḯfault'.

- It is a voiced aspirated glottal fricative occurring always initially before ḯr ḯand ḯl ḯ. e.g., ḯhrīd ḯheart', ḯhlād ḯdelighted'.

- It is a voiceless aspirated glottal fricative occurring word-initially and word-medially. e.g., ḯhār ḯhand', ḯguḥ ḯcave'. It occurs rarely word finally. e.g., ḯbār ḯexclamation of joy'.

2.7 THE ORIYA CONSONANT SOUNDS

In Oriya, there are altogether thirty-seven consonant sounds. The distinction between these consonant sounds are made by the points or places of articulation and the ways or the manners of articulation. The Oriya consonants, from the points of articulation, are distinguished as bi-labial, dental, alveolar, retroflex, palatal, palato-alveolar, velar and glottal. Viewed from the point of manners of articulation they are distinguished as stop, affricate, nasal, lateral, trill, flap, fricative and semi-vowels. These are again distinguished as voiced, unvoiced, aspirated and unaspirated.
2.7.1 DESCRIPTION AND OCCURRENCE OF ORIYA CONSONANT SOUNDS

\[ \text{p} \] - It is a voiceless unaspirated bilabial stop occurring initially, medially and rarely finally. e.g., \( \text{pila} \) 'child', \( \text{bapa} \) 'father', \( \text{sop} \) 'you curse'.

\[ \text{ph} \] - It is a voiceless aspirated bilabial stop occurring initially, medially and rarely finally. e.g., \( \text{phono} \) 'fruit', \( \text{sopha} \) 'clean', \( \text{goph} \) 'you speak on'.

\[ \text{b} \] - It is a voiced unaspirated bilabial stop occurring initially, medially and rarely finally. e.g., \( \text{bato} \) 'road', \( \text{sobu} \) 'everything'.

\[ \text{bh} \] - It is a voiced aspirated bilabial stop occurring word initially and word medially. e.g., \( \text{bha} \) 'rice (cooked)', \( \text{labha} \) 'profit'.

\[ \text{t} \] - It is a voiceless unaspirated dental stop occurring word initially, word medially and rarely word finally. e.g., \( \text{tu} \) 'you', \( \text{rati} \) 'night', \( \text{tophat} \) 'difference'.

\[ \text{th} \] - It is a voiceless aspirated dental stop occurring word initially and word medially. e.g., \( \text{thali} \) 'plate', \( \text{roth} \) 'chariot'.

\[ \text{\textit{d}} \] - It is a voiced unaspirated dental stop occurring word initially, word medially and rarely word finally. e.g., \[ \text{\textit{d}}\text{ohi} \] 'curd', \[ \text{\textit{mido}} \] 'sleep', \[ \text{\textit{basd}} \] 'deduction'.

\[ \text{\textit{dh}} \] - It is a voiced aspirated dental stop occurring word initially, word medially and rarely word finally. e.g., \[ \text{\textit{dhano}} \] 'wealth', \[ \text{\textit{gadho}} \] 'donkey', \[ \text{\textit{so:ch}} \] (you) scold'.

\[ \text{\textit{t}} \] - It is a voiceless unaspirated retroflex stop occurring word initially, word medially and rarely word finally. e.g., \[ \text{\textit{tarke}} \] 'a rupee', \[ \text{\textit{baT}} \] 'road', \[ \text{\textit{kast}} \] (you) cut'.

\[ \text{\textit{Th}} \] - It is a voiceless aspirated retroflex stop occurring word initially, word medially and rarely word finally. e.g., \[ \text{\textit{Thakur}} \] 'God', \[ \text{\textit{miTha}} \] 'sweet', \[ \text{\textit{us:Th}} \] (you) wake up'.

\[ \text{\textit{D}} \] - It is a voiced unaspirated retroflex stop occurring word initially and word medially in a few consonant combinations as a second member. e.g., \[ \text{\textit{Deri}} \] 'late', \[ \text{\textit{ubro}} \] 'ancient name of Orissa', \[ \text{\textit{NDa}} \] 'egg'.

\[ \text{\textit{Dh}} \] - It is a voiced aspirated retroflex stop occurring word initially and word medially in a few consonant combinations as a second member. e.g., \[ \text{\textit{Dhal}} \] 'shield', \[ \text{\textit{sNDh}} \] 'bull'.

\[ \text{\textit{Th}} \] - It is a voiceless aspirated retroflex stop occurring word initially, word medially and rarely word finally. e.g., \[ \text{\textit{Thakur}} \] 'God', \[ \text{\textit{miTha}} \] 'sweet', \[ \text{\textit{us:Th}} \] (you) wake up'.

\[ \text{\textit{D}} \] - It is a voiced unaspirated retroflex stop occurring word initially and word medially in a few consonant combinations as a second member. e.g., \[ \text{\textit{Deri}} \] 'late', \[ \text{\textit{ubro}} \] 'ancient name of Orissa', \[ \text{\textit{NDa}} \] 'egg'.

\[ \text{\textit{Dh}} \] - It is a voiced aspirated retroflex stop occurring word initially and word medially in a few consonant combinations as a second member. e.g., \[ \text{\textit{Dhal}} \] 'shield', \[ \text{\textit{sNDh}} \] 'bull'.

\[ \text{\textit{Th}} \] - It is a voiceless aspirated retroflex stop occurring word initially, word medially and rarely word finally. e.g., \[ \text{\textit{Thakur}} \] 'God', \[ \text{\textit{miTha}} \] 'sweet', \[ \text{\textit{us:Th}} \] (you) wake up'.
\[ [\text{k}] \] - It is a voiceless unaspirated velar stop occurring word initially, word medially and rarely word finally. e.g., \[ [\text{k}\text{bT}] \] 'door', \[ [\text{c}\text{k}] \] 'wheel', \[ [\text{T}\text{i}\text{k}] \] 'right'.

\[ [\text{kh}] \] - It is a voiceless aspirated velar stop occurring word initially, word medially and rarely word finally. e.g., \[ [\text{kh}\text{i}] \] 'ditch', \[ [\text{a}\text{hu}] \] 'sugar-cane', \[ [\text{l}\text{i}\text{kh}] \] '(you) write'.

\[ [\text{g}] \] - It is a voiced unaspirated velar stop occurring word initially, word medially and rarely word finally. e.g., \[ [\text{g}\text{ch}] \] 'tree', \[ [\text{l}\text{uga}] \] 'cloth', \[ [\text{ra}\text{g}] \] '(you) get angry'.

\[ [\text{gh}] \] - It is a voiced aspirated velar stop occurring word initially and word medially. e.g., \[ [\text{gh}\text{r}] \] 'house', \[ [\text{b}\text{ag}] \] 'tiger'.

\[ [\text{c}] \] - It is a voiceless unaspirated palato-alveolar affricate occurring word initially, word medially and rarely word finally. e.g., \[ [\text{c}\text{k}] \] 'wheel', \[ [\text{n}\text{ac}] \] 'dance', \[ [\text{n}\text{ac}] \] '(you) dance'.

\[ [\text{ch}] \] - It is a voiceless aspirated palato-alveolar affricate occurring word initially, word medially and rarely word finally. e.g., \[ [\text{ch}\text{r}] \] 'knife', \[ [\text{m}\text{ach}] \] 'fly', \[ [\text{b}\text{ach}] \] '(you) choose'.

\[ [\text{j}] \] - It is a voiced unaspirated palato-alveolar affricate occurring word initially, word medially
and rarely word finally e.g. 'jhor fever', 'soja punishment', 'bhaij (you) fry'.

\[\text{[jh]}\] - It is a voiced aspirated palato-alveolar affricate occurring word initially, word medially and rarely word finally e.g. 'jholo soup', 'majhi boatman', 'burjh (you) enquire'.

\[\text{[m]}\] - It is a voiced unaspirated bilabial nasal occurring word initially, word medially and rarely word finally e.g. 'mohan honey', 'kamaj work', 'dasam price'.

\[\text{[n]}\] - It is a voiced unaspirated dental nasal occurring word medially either before or after dental sounds e.g. 'smah bath', 'danta tooth'.

\[\text{[n]}\] - It is a voiced unaspirated alveolar nasal occurring word initially, word medially and rarely word finally e.g. 'mana elder brother', 'sana small', 'borthman now'.

\[\text{[n]}\] - It is a voiced unaspirated retroflex nasal occurring word medially and rarely finally e.g. 'ndaeg egg', 'aun (you) bring'.

\[\text{[R]}\] - It is a voiced unaspirated retroflex flapped nasal occurring only intervocalically e.g. 'aparn you (hon.)'.

...
\[ \hat{\eta} \] - It is a voiced unaspirated palato-alveolar nasal occurring word medially before palato-alveolar affricates. e.g., \text{\textipa{kɔnca}} 'raw\textipa{, gɔnja} 'hemp\textipa{'.}

\[ \hat{\eta} \] - It is a voiced unaspirated velar nasal occurring in the medial position of words before velar stops. e.g., \text{\textipa{nka}} 'mathematics', \text{\textipa{rong}} 'colour', \text{\textipa{barongo}} 'name of a place'.

\[ \hat{l} \] - It is a voiced unaspirated alveolar lateral occurring word initially, word medially and rarely word finally. e.g., \text{\textipa{lajɔ}} 'shyness', \text{\textipa{bhɔlɔ}} 'good', \text{\textipa{lalɔ}} 'red'.

\[ \hat{r} \] - It is a voiced unaspirated retroflex lateral occurring word medially and rarely finally. e.g., \text{\textipa{kɔLa}} 'black', \text{\textipa{dhɔLa}} 'white', \text{\textipa{joL}} '(you) burn'.

\[ \hat{r} \] - It is a voiced unaspirated alveolar trill occurring word initially, word medially and rarely word finally. e.g., \text{\textipa{ratin}} 'night', \text{\textipa{garin}} 'line', \text{\textipa{masrin}} '(you) beat'.

\[ \hat{R} \] - It is a voiced unaspirated retroflex flap occurring word medially and rarely word finally. e.g., \text{\textipa{boRin}} 'big', \text{\textipa{poRin}} '(you) fall down'.

\[ \hat{Rh} \] - It is a voiced aspirated retroflex flap occurring word medially and rarely word finally. e.g., \text{\textipa{bɔRhin}} 'flood', \text{\textipa{kəRhin}} '(you) snatch'.

-/s/- It is a voiceless unaspirated dental fricative occurring word initially, word medially and rarely word finally. e.g., /scpha/ 'clean', /musa/ 'mouse', /beis/ 'well'.

-/h/- It is a voiced aspirated glottal fricative occurring always initially before /r/ and /l/. e.g., /hrad/ 'lake', /ladini/ 'delighting'.

-/h/- It is a voiceless aspirated glottal fricative occurring word initially, word medially and rarely word finally. e.g., /hojar/ 'one thousand', /mcha/ 'honey', /cah/ 'exclamation of pain'.

-/w/- It is a voiced bi-labial semi-vowel occurring rarely in the initial position, medially between vowels and in consonant clusters as a second member. e.g., /warwnt/ 'warrant', /hawa/ 'wind', /dhwandi/ 'sound'.

-/y/- It is a voiced palatal semi-vowel occurring rarely in the initial position, medially between vowels and in consonant clusters as a second member. e.g., /yaku/ 'to this person', /bhyo/ 'fear', /bhyaos/ 'practice'.
2.8 COMPARISON OF BENGALI AND ORIYA CONSONANT SOUNDS

From the above discussion it is clear that Bengali has thirty-five consonant sounds whereas Oriya has thirty-seven. Though the difference in the number of consonant sounds is two but it does not mean that with the exception of these two consonant sounds the other thirty-five are similar in both the languages. Bengali and Oriya, although share the same number of consonants but the consonantal inventories of these languages are not identical. Therefore, the consonant sounds of both these languages are compared in terms of similarity and difference.

2.8.1 THE CONSONANT SOUNDS SIMILAR IN BENGALI AND ORIYA

There are thirty-four consonant sounds available in both the languages which are phonetically similar, although these similar consonants function differently in these two languages. The similar consonant sounds of both the languages are given below:

Table - 5

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2.8.2 THE CONSONANT SOUND DIFFERENT IN BENGALI

There is only one consonant sound that is the palato-alveolar fricative $\ddot{s}$ which is specific to Bengali.

2.8.3 THE CONSONANT SOUNDS DIFFERENT IN ORIYA

There are three consonant sounds which are specific to Oriya. They are: the flapped nasal $\ddot{a}$, the bilabial semi-vowel $\ddot{w}$ and the palatal semi-vowel $\ddot{y}$. 