Chapter 3
3.1 Introduction

A verb is categorized as intransitive, transitive or ditransitive. An intransitive verb does not require an object whereas, a transitive verb requires an object. Some verbs have an intransitive as well as transitive properties. A ditransitive verb requires an indirect object and a direct object. In addition to these, some verbs take sentential clause as a complement [27].

The other two aspects considered in formulating the grammar rules are voice and causal forms. The passive form of a verb is obtained by adding the suffixes *aa jaa* or *yaa jaa* to the verb root. The causative form of a verb can have two forms, called first causative and second causative. The first causative form of a verb is obtained by adding the suffix *aa* or *yaa* to the verb root. The second causative form is obtained by adding the suffix *vaa* to the verb root. Adding of the suffixes to a verb root may lead to internal changes in most verb roots. A verb in the first causative form requires an instigating agent in addition to an active agent. A verb in the second causative form requires a mediating agent in addition to an instigating and an active agent.

A verb phrase is verb root(s) followed by suffixes (*pratyaya*) denoting tense, aspect or mood. A Hindi verb phrase is categorized as simple, compound or complex. A simple verb phrase consists a single verb. A compound consists of two consecutive verb roots, only the first verb contributes to the meaning of the sentence. A complex verb phrase consists of a pre-verb (called *kriyaamool*) followed by verb(s). A pre-verb is either a noun phrase or an adjective phrase [30].

In a Hindi verb phrase, tense and mood suffixes are mutually disjoint and thus do not occur together in a sentence. A tense suffix represents the temporal point in the logical time frame denoting present, past, future or presumptive. A mood suffix denotes
mental states like expressing permission, suggestion etc. The aspect suffix denotes perfect, imperfect, continuous, progressive, completive, inceptive or ingressive aspect of an action. In a Hindi verb phrase, aspect suffix occurs prior to tense or mood suffix. Tense or mood if present, is denoted by the last suffix in the verb phrase [29].

The following sections describe rules for different verb phrase together with associated functional equations.

### 3.2 Simple Verb Phrase

A simple verb phrase is either a verb root or a verb root followed by suffixes. In the rules, the symbols AS and TENSE denote aspect suffix and tense suffix respectively. In these rules, Symbol PGN1 denotes person, number gender suffixes for present, past and future tense, symbol PGN2 denotes person, number, gender suffix occurring before future tense marker and symbol PGN3 denotes and number, gender, person suffix coming after aspect marker. Symbols MOOD1, and MOOD2 denote mood suffixes. Symbol V and Vsuf denote verb root and verb suffix, respectively.

The following rules are proposed to describe the structure of a simple verb phrase. In the examples verb phrase is underlined.

1. \( VP \rightarrow V(^{=1}) (^{subj \ person} = 21) \)

This rule states that a verb phrase consists of a verb root. The functional equations state that the subject of the sentence must be *too*.

In the above rules *too* is denoted by the value 21 of the attribute 'subj person'. This value 21 denotes second person and singular number. In the present work an Attribute person is represented by a numerical value instead of representing them by 'first', 'second' and 'third'. This is because there are pronouns denoting the same person and number, yet follow different agreement rules. The different numerical values for different personal pronouns make it easy to establish agreement relationship in clauses.
containing pronouns. The examples adhering to this rule are:

(i) too khaa.
(ii) too pee.

2. VP -> V(= !) AS
   ( !aspect =c_{1} continuous_{1}) ( ^ subj person =c_{1} 21) (^ = !)
   OR
   ( !aspect =c_{1} progressive_{1}) ( ^ subj person =c_{1} 21) (^ = !)
   OR
   ( !aspect =c_{1} progressive_{3}) ( ^ subj person =c_{1} 21) (^ = !)
   OR
   ( !aspect =c_{1} continuous_{5}) ( ^ subj person =c_{1} 21) (^ = !)
   OR
   ( !aspect =c_{1} progressive_{8}) ( ^ subj person =c_{1} 21) (^ = !)
   OR
   ( !aspect =c_{1} progressive_{9}) ( ^ subj person =c_{1} 21) (^ = !)

This rule states that a verb phrase consists of a verb root followed by a an aspect suffix. The first functional equation gives the information about aspect type. The second equation states that the subject of the sentence must be too. The examples adhering to this rule are:

(i) too khaataa rah:
(ii) too likhataa chal.
(iii) too khelataa jaa.
(iv) too sovaa rah.
v) too sovaa kar.
(vi) too ise sambhaale rakh.

3. VP -> V(= !) AS
   ( !aspect =c_{1} ~continuous_{2}) PGN3(= !)
   ( !aspect =c_{1} ~progressive_{5}) ( !aspect =c_{1} ~ingressive_{1})
   ( !aspect =c_{1} ~ingressive_{2}) ( !aspect =c_{1} ~progressive_{8})
   ( !aspect =c_{1} ~continuous) (^ = !)

This rule states that a verb phrase is a sequence of verb root, aspect suffix, and number, gender and person suffix. The functional equations, in this rule make sure that
sentence with improper aspects are not allowed. The examples adhering to this rule are:

(i) vah roj baajaar jaataa.
(ii) vah aaj chaar ghanTe soyaa.
(iii) main raat bhar jaagataa raaha.
(iv) ramesh raaton bhar jaagataa rahataa.
(v) gitikaa baarish men bheegateen chalee.
(vi) vah bolataa chalataa.
(vii) vah tabalaa bajaataa jaataa.
(viii) vah chaaval khaataa gayaa.
(ix) vah tab se khaataa jaa raaha.
(x) ramesh hameshaa bhaagataa aataa.
(xi) mukesh raaste bhar bas men sotaay aayaa.
(xii) ve raaste bhar bas men sotee aa raheen.
(xiii) main khaanaa khaa chukaa.
(xiv) rohanee tab tak khaanaa khaa chukatee.
(xv) rohit ne khaanaa khaa rakhaa.
(xvi) too abhee khaane lagaa.
(xvii) ramesh subah hee khaane lagataa.
(xviii) bachche khelane jaa rahe.
(xix) sushamaa dinbhar sotee rahatee.
(xx) laRakiyaan roj shaam ko paanee bharaa karateen.
(xxi) vah saare kaam kiye rakhaa.
(xxii) ramesh saare kaam kiye rakhattaa.

4. VP \rightarrow V(^=!) AS !(aspect =ci imperfective) (^=!) PGN3(^=!)

OR

!(aspect =ci perfective) (^=!)

OR

!(aspect =ci continuous) (^=!)

TENSE( !tense = ~future) (^=!) PGN1(^=!)

This rule states that a verb phrase is a sequence of verb root, aspect suffix,
number-gender-person suffixes, tense suffix and number-gender-person suffixes. The examples adhering to this rule are:

(i) *suresh roj baajaar jaataa hai.*
(ii) *vah phal khaa raha thaa.*
(iii) *unhonne khaanaa khaayaa thaa.*

5. VP -> V(^ = !) AS ( !aspect =ci ~perfect) PGN2(^ = !)

( !aspect =ci ~imperfect) ( !aspect =ci ~continuous)
( !aspect =ci ~habitual) ( !aspect =ci ~progressive2)
( !aspect =ci ~continuous) ( !aspect =ci ~progressive4)
( !aspect =ci ~continuous) ( !aspect =ci ~progressive6)
( !aspect =ci ~progressive) ( !aspect =ci ~progressive7)
( !aspect =ci ~completive) ( !aspect =ci ~inceptive)
( !aspect =ci ~progressive) ( !aspect =ci ~inceptive)
( !aspect =ci ~habitual) ( !aspect =ci ~habitual)
( !aspect =ci ~progressive) ( ^ = !)

TENSE( !tense =ci future) ( ^ = !) PGN1(^ = !)

In the rule, symbol PGN2 denotes person and number suffixes occurring before future tense suffix. This rule states that a verb phrase is a sequence of verb root, aspect suffix, person-number suffixes, tense suffix, and number-gender-person suffixes. The examples adhering to this rule are:

(i) *mohan raat bhar paRhtaa rahegaa.*
(ii) *vah apanee dhun men gaataa chalegaa.*
(iii) *suresh apanee hee baat bolataa jaayegaa.*

6. VP -> V(^ = !) MOOD1( ^ = !)

In the rule, symbol MOOD1 denotes mood suffix. This rule states that a verb phrase is a verb root followed by a mood suffix. The examples adhering to this rule are:

(i) *tum paRho.*
(ii) *vah baajaar jaaye.*
(iii) *aap kursee par baithiye gaar.*
This rule states that a verb phrase is a sequence of a verb root, an aspect suffix, and a mood suffix. The examples adhering to this rule are:

(i)  *tum paRhate raho.*

(ii)  *aap hamen sikhaate rahiye.*

(iii)  *tum usako samjhaate jaanaa.

In this rule, \textit{MOOD2} denotes another category of mood suffixes which may occur with tense suffix also. This rule states that a verb phrase is a sequence of verb root, mood suffix, aspect suffix, and number-gender-person suffix. The examples adhering to this rule are:

(i)  *vah nahin khiya sakaa.*
main aaj nahin jaa sakataa.
ham raat bhar jaagate rahe hain.
ramesh raaton bhar jaagataa rahataa.
gitikaa baarish men bheegateen chalee.
vah bolataa chalataa.
vah tabalaa bajaataa jaataa.
vah chaaval khaataa gayaa.
vah tab se khaataa jaa rahaa.
ramesh hameshaa bhaagataa aataa.
mukesh raaste bhar bas men sotaa aayaa.
ve raaste bhar bas men sotee aa raheen.
main khaanaa khaa chukaa.
rohanee tab tak khaanaa khaa chukatee.
rohit ne khaanaa khaa rakhaa.
too abhee khaane lagaa.
ramesh subah hee khaane lagataa.
bachche khelane jaa rahe.
sushamaa dinbhar sotee rahatee.
lalRakiyaan roj shaam ko paanee bharaa karateen.
vah saare kaam kive rakhaa.
ramesh saare kaam kive rakhataa.

9. VP - > V( ^ = ! ) MOOD2 ( !mood = slides ~compulsion1 ) ( !mood = slides ~compulsion3 )
( !mood = slides ~ability1 ) ( !mood = slides ~compulsion4 )
( !mood = slides ~possibility1 ) ( ^ = ! )
AS. ( !aspect = slides continuous ) ( ^mood = slides ~ability )
( ^mood = slides ~possibility ) ( ^ = ! )

OR

( !aspect = slides imperfect ) ( ^ = ! )

OR

( !aspect = slides perfect ) ( ^mood = slides ~possibility )
( ^ = ! )
This rule states that a verb phrase is a sequence of verb root, mood suffix, aspect suffix, number-gender-person suffix for aspect, tense suffix and number-gender-person suffix for tense. The examples adhering to this rule are:

(i) vah nahin khaa sakaa thaa.
(ii) main aaj nahin jaa sakataa hoon.
(iii) ham raat bhar jaagate rahe hain.
(iv) ramesh raat bhar jaagatoo rahataa hai.
(v) gitikaa baarish men bheegateen chalee hai.
(vi) ve bolatee chalatee hain.
(vii) vah tabalaa bajaataa jaataa hai.
(viii) vah chaaval khaatee gayee thaa.
(ix) vah tab se khaataa jaa raahaa hai.
(x) ramesh hameshaa bhaagataa aataa hai.
(xi) mukesh raaste bhar bas men sotaa aayaa hai.
(xii) ve raaste bhar bas men sotee aa raheen hain.
(xiii) main khaanaa khaa chukaa hoon.
(xiv) rohanee tab tak khaanaa khaa chukatee thee.
(xv) bachchon ne khaanaa khaa rakhaa hai.
(xvi) tum abhee khaane lage ho.
(xvii) ramesh subah hee khaane lagataa hai.
(xviii) bachche khelane jaa rahe hain.
(xix) sushamaa dinbhar sotee rahatee hai.
(xx) LaRakiyaan roj shaam ko paanee bharaa karateen hain.
(xxi) vah saare kaam kiye rakhaa thai.
(xxii) ramesh saare kaam kiye rakhataa hai.

10. VP -> V(^ = !) MOOD2(^ = !) TENSE (^[tense =a~future) ( ^ = !) PGN1(^ = !)

(^[mood =cd compulsion1) ( ^ = !)

OR

(^[tense = ci past)

(^[mood =cd compulsion3) ( ^ = !)
This rule states that a verb phrase is a sequence of verb root, mood suffix, tense suffix and number-gender-person suffix for tense. The examples adhering to this rule are:

(i) mujhe aaj jaanaa thaa.
(ii) bachchon ko klelanaa hai.
(iii) seeta ko paanee bhranaa hai.
(iv) ramesh raat bhar jaagataa rahataa hai.
(v) aapako patra bhejanaa chaahiye thaa.
(vi) ve aaj khelane nahi jaa sakegaa.
(vii) laRakiyaan aaj nahin so paayengee.
(viii) sohan se kaRhee nahin khaaye jaayegee.
(ix) mujhse saanbhar khaate nahin banegaa.

11. VP -> V(= !) AS ( !aspect =ci continuous1) ( ^ = !)

    OR
    ( !aspect =ci progressive1) ( ^ = !)

    OR
    ( !aspect =ci progressive3) ( ^ = !)

    OR
    ( !aspect =ci progressive5) ( ^ = !)

    OR
    ( !aspect =ci continuous5) ( ^ = !)

    MOOD2 ( !mood =ci ability1) ( ^ = !)

    OR
    ( !mood =ci compulsion4) ( ^ = !)

    OR
    ( !mood =ci possibility1) ( ^ = !)

    PGN3(=!) TENSE(!tense =ci ~future) ( ^ = !) PGN1(= !)

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This rule states that a verb phrase is a sequence of verb root, aspect suffix, number-gender-person suffix for aspect, mood suffix, number-gender-person suffix for mood, tense suffix and number-gender-person suffix for tense. The examples adhering to this rule are:

(i) vah raat bhar paRhataa rah sakataa hai/thaa/hogaa.
(ii) unako raat bhar jaagate rahanaa paR sakataa hai/thaa/hogaa.
(iii) adhyaapak ko bolate rahanaa paRataa hain/thaa/hogaa.
(iv) ramesh langaRaate chal sakataa hai/thaa/hogaa.
(v) gitikaa ko saamaan lete chalanaa paR sakataa hai/thaa/hogaa.
(vi) usako bolate chalanaa paRataa hain/thaa/hogaa.
(vii) vah din bhar tabalaak bajaate jaa sakataa hai/thaa/hogaa.
(viii) seetaa ko der tak gaate jaanaa paRataa hai/thaa/hogaa.
(ix) mahaphil men der tak gaate jaanaa paR sakataa hai/thaa/hogaa.
(x) ve auraten yahaan tak Tahalatee aa sakatee hain/theen/hongee.
(xi) mujhe vaapas Tahalate aanaa paR sakataa hai/thaa/hogaa.
(xii) usako vaapas Tahalate aana paRataa hain/thaa/hogaa.

12. VP -> V(\(^= !\)) \(\text{AS}(^=1)\) (\(
\begin{align*}
&(!\text{aspect} =_a \text{continuous}) \ (^= !) \\
&\text{OR} \\
&(!\text{aspect} =_a \text{progressive}1) \ (^= !) \\
&\text{OR} \\
&(!\text{aspect} =_a \text{progressive}3) \ (^= !) \\
&\text{OR} \\
&(!\text{aspect} =_a \text{progressive}5) \ (^= !) \\
&\text{OR} \\
&(!\text{aspect} =_a \text{continuous}5) \ (^= !) \\
&MOOD2(!\text{mood} =_a \text{compulsion}) \ (^= !) \ PGN2(\(^= !\)) \\
&TENSE(!\text{tense} =_a \text{future}) \ (^= !) \ PGN1(\(^= !\))
\end{align*}
\)

This rule states that a verb phrase is a sequence of verb root, aspect suffix, mood suffix, number-gender-person suffix for mood, tense suffix and number-gender-person suffix for tense. The examples adhering to this rule are:

(i) mujhe saaree raat paRhate rahanaa paRegaa.
(ii) aapako Tahalate chalanaa paRegaa.
(iii) mehamaanon ko nipaTaate jaanaa paRegaa.
(iv) laRakiyon ko andhere men bolate aanaa paRegaa.
(v) tumhen chaar din tak sote rahanaa paRegaa.

13. VP -> V(\(^= 1\)) AS (\(!aspect =ci\) continuous1) (\(^= 1\))
OR
(\(!aspect =ci\) progressive1) (\(^= 1\))
OR
(\(!aspect =ci\) progressive3) (\(^= 1\))
OR
(\(!aspect =ci\) progressive5) (\(^= 1\))
OR
(\(!aspect =ci\) continuous5) (\(^= 1\))

MOOD2 (\(!mood =ci\) compulsion1) TENSE (\(!tense =ci\) ~future)
(\(^= 1\)) (\(!mood =cd\) compulsion1)
OR
\(^= 1\)\)
OR

MOOD2 (\(!mood =ci\) compulsion3) TENSE (\(!tense =ci\) past)
(\(^= 1\)) (\(!mood =cd\) compulsion3)
(\(^= 1\))

PGN3 (\(^= 1\))

This rule states that a verb phrase is a sequence of verb root, aspect suffix, mood suffix, tense suffix and number-gender-person suffix for tense. The examples adhering to this rule are:

(i) mujhako raat bhar paRhte rahanaa hai/thaa/hogaa.
(ii) gitikaa ko saamaan lete chalanaa hai/thaa/hogaa.
(iii) usako tabalaa bajaate jaanaa hai/thaa/hogaa.
(iv) tumhe vaapas Tahalate aanaa hai/thaa/hogaa.
(v) aapako teen din tak soye rahanaa hain/thaa/hogaa.
(vi) mujhako raat bhar paRhte rahanaa chaahiye thaa.
(vii) gitikaa ko saamaan lete chalanaa chaahiye thaa.
3.3 Compound Verb Phrase

This section describes rules for compound verb phrase together with associated functional equations. A compound verb phrase consists of two verb roots followed by suffixes denoting aspect, tense and mood. The first verb root is the main verb. It contributes to the meaning of the sentence. The second verb root is the intensifier. It does not contribute to the meaning of the sentence.

The following rules proposed to describe the structure of a compound verb phrase are:

1. \[ \text{VP} \rightarrow \text{V}(\wedge = !) \; \text{V} (\text{pred} \in \text{inten_list}) \; \text{AS} (\text{aspect} = _c \text{ perfect}) \newline \text{\quad} (\wedge \text{vcat} = ! \text{vcat}) \newline \text{\quad} (\wedge \text{vcat} = _d \text{ transitive}) \newline \text{\quad} (\wedge \text{subj parsarg} = _d \text{ ne}) (\wedge = !) \]
   \[ \text{OR} \]
   \[ (\text{!aspect} = _c \text{ perfect}) \newline (\wedge \text{subj parsarg} = _d \phi) (\wedge = !) \]
   \[ \text{OR} \]
   \[ (\text{!aspect} = _c \text{ imperfect}) \newline (\wedge \text{subj parsarg} = _d \phi) (\wedge = !) \]
   \[ \text{OR} \]
   \[ (\text{!aspect} = _c \text{ inceptive1}) \newline (\wedge \text{subj parsarg} = _d \phi) (\wedge = !) \]
   \[ \text{OR} \]
   \[ (\text{!aspect} = _c \text{ continuous}) \newline (\wedge \text{subj parsarg} = _d \phi) (\wedge = !) \]

\[ \text{PGN3}(\wedge = !) \]
This rule states that a compound verb phrase is a sequence of two verb root, aspect suffix and number-gender-person suffix for aspect. The examples adhering to this rule are:

(i)  *raam ne mohan ko pustaken saunp dee.*
(ii) *LaRakiyaan ghar se bhaag gayee.*
(iii) *ve samay par patr bhej deteen.*
(iv) *bachchaa seeRhiyon se khud utar aane lagaa.*
(v)  *ye log roj shaam ko pee liya karate.*

2. VP -> V(\(\land = !\)) V (\(!\)\)pred \(\in\) ^inten_list^ AS (\(!\)aspect =\(_c\) perfect) (\(!\)vcat1 = \(_c\)vcat) (\(!\)vcat =\(_c\) transitive) (\(!\)vcat1 =\(_c\) transitive) (\(!\)subj parsarg =\(_c\) ne) (\(\land = !\))
   OR
   (\(!\)aspect =\(_c\) imperfect)
   (\(!\)subj parsarg =\(_c\) \(\phi\)) (\(\land = !\))
   OR
   (\(!\)aspect =\(_c\) inceptive1)
   (\(!\)subj parsarg =\(_c\) \(\phi\)) (\(\land = !\))
   OR
   (\(!\)aspect =\(_c\) continuous)
   (\(!\)subj parsarg =\(_c\) \(\phi\)) (\(\land = !\))
   PGN3(\(\land = !\)) TENSE(\(!\)tense = \(\neg\)future) (\(\land = !\)) PGN1(\(\land = !\))
(iv) bachcha seeRhiyon se khud utar aane lagaa hai/thaa/hogaa.
(v) ye log roj shaam ko pee liyaa karate hain/the/honge.

3. VP -> V(\(^=1\)) \(V(!\text{pred} \in \inten\_list)\) \(PGN3(\(^=1\))\)
\(\left(\text{^vcat}1 = !\text{vcat}\right)\)
\(TENSE(!\text{tense} =_{ci} \text{future}) (\(^=1\)) \) \(PGN1(\(^=1\))\)
This rule states that a compound verb phrase is a sequence of two verb root, number-gender-person suffix, tense suffix and number-gender-person suffix for tense.
The examples adhering to this rule are:
(i) haathae aag se Dar jaayenge.
(ii) bachchee andhere men Dar jaayegaa.
(iii) bandar saare aam khaa jaayenge.
(iv) striyaan dange dekhakar ro paRengee.

4. VP -> V(\(^=1\)) \(V(!\text{pred} \in \inten\_list)\) \(\left(\text{^vcat}1 = !\text{vcat}\right)\) \(MOOD1(\(^=1\))\)
This rule states that a compound verb phrase is a sequence of two verb root, mood suffix. The examples adhering to this rule are:
(i) tum yahaan se turant bhaag jaaao.
(ii) saaraa kooRaa door phenk do.
(iii) aap ye sab dekhakar ro paRiyegaa.
(iv) tum kal jaroor aa jaanaa.

5. VP -> V(\(^=1\)) \(V(!\text{pred} \in \inten\_list)\) \(\left(\text{^vcat}1 = !\text{vcat}\right)\) \(MOOD2(\(^=1\))\) \(PGN3(\(^=1\))\)
\(OR\)
\(\left(\text{^mood} =_{ci} \text{compulsion}2\right) (\(^=1\))\)
\(\left(\text{^mood} =_{ci} \text{compulsion}3\right) (\(^=1\))\)
This rule states that a compound verb phrase is a sequence of two verb root, mood suffix and number-gender-person suffix for mood. The examples adhering to this rule are:
(i) use turant desh chhoRakar bhaag jaanaa paRaa.
(ii) unhen samay par khaa lenaa chaahiye.
6. VP -> V(^ = !)   V(!pred e ^inten_list) (^vcatl = !vcat)

MOOD2   (!mood =_ci compulsion1) TENSE   (!tense =_ci ~future) (^ = !)

(^ = !)   (^mood =_ci compulsion1)

OR

(!mood =_ci compulsion3)   (!tense =_ci past) ( ^ = ! )

(^ = !)   (^mood =_ci compulsion3)

PGN1(^ = !)

This rule states that a compound verb phrase is a sequence of two verb root, mood suffix, tense suffix and number-gender-person suffix for tense. The examples adhering to this rule are:

(i)  aapako kal samay par ad jaanaa hai.

(v)  tumhe samay par aa jaanaa chaahiye thaa.

3.4 Complex Verb Phrase

This section describes rules for a complex verb phrase together with associated functional equations. A complex verb phrase consists of a pre-verb (kriyaamool) and a verb root followed by suffixes denoting aspect, tense, mood etc. The verb root is called verbalizer (kriyaakar) A pre_verb is either a noun, an adjective or a special kind of word (called kriyaangee) which can occur only as an integral part of a complex verb phrase (e.g. maaloom). Generally, two verb roots kar and ho are used as a verbalizer. In the rules, symbols KM and KKAR denotes preverb and verbalizer, respectively.

The following rules proposed to describe the structure of a complex verb phrase are:

1. VP -> KM (! kmtype =_ci +)   KKAR(!pred e ^kr_list) (^kriyakar = !)

(^pred = !vpred)

(^kr_list = !kr_list)

(^parsarg = !parsarg)

(^kmtype = !kmtype)
This rule states that a complex verb phrase is a pre-verb followed by a verbalizer. The examples adhering to this rule are:

(i) \textit{too raam kee sahaayataa kar.}
(ii) \textit{too gaRee Theek kar.}
(iii) \textit{bhagavaan aapako shaanti de.}

2. VP -> KM (! kmtype = ci +) KKar(!pred e ^kr_list) (^kriyakar = !)

\begin{align*}
&(!pred = !vpred) \\
&(!kr_list = !kr_list) \\
&(!parsarg = !parsarg) \\
&(!kmtype = !kmtype)
\end{align*}

This rule states that a complex verb phrase is a sequence of a pre-verb, verbalizer, aspect suffix and number-gender-person suffix for aspect. The examples adhering to this rule are:

(i) \textit{bachchaan maan ko roj vaad karataa.}
(ii) \textit{in logo ne reetaa kee kaaphee madad kee.}
(iii) \textit{vahaapanee maan ko kaaphee pyaar karataa rahaa.}
(iv) \textit{laRakiyaan khaalee samay par baaten karatee rahateen.}
(v) \textit{raakesh do saal pahale shaadee kar chukaa.}
(vi) \textit{preeti ne khelkood me hameshaa ruchi rakhee.}
(vii) \textit{use sab kuchh vaad aane lagaa.}
(viii) \textit{mai ke baad bahut garmee hone lagatee.}
3. VP -> KM (!kntype =ci +) KKAR(!pred ε ^kr_list) (^kriyakar = !)
   (^pred = !vpred)
   (^kr_list = !kr_list)
   (^parsarg = !parsarg)
   (^kntype = !kntype)
   AS (!aspect =ci perfect) (^ = !) PGN3(^ = !)
   OR
   ( !aspect =ci imperfect) (^ = !)
   OR
   ( !aspect =ci continuous) (^ = !)
   OR
   ( !aspect =ci ingressive1) (^ = !)
   OR
   ( !aspect =ci ingressive2) (^ = !)
   OR
   ( !aspect =ci ingressive3) (^ = !)
   OR
   ( !aspect =ci habitual1) (^ = !)
   OR
   ( !aspect =ci habitual3) (^ = !)
   OR
   ( !aspect =ci completive1) (^ = !)
   OR
   ( !aspect =ci completive3) (^ = !)
   OR
   ( !aspect =ci inceptive1) (^ = !)
   TENSE( !tense = ~future) (^ = !) PGN1(^ = !)

This rule states that a complex verb phrase is a sequence of a pre-verb, verbalizer, aspect suffix, number-gender-person suffix for aspect, tense and number-gender-person suffix for tense. The examples adhering to this rule are:
(i) bachchaa maan ko roj yaad karataa hai/thaa/hogaa.
(ii) in logo ne reetaa kee kaaphee madad kee hai/thee/hogee.
(iii) vah aapanee maan ko kaaphee pyaar karataa rahaa hai/thaa/hogaa.
(iv) laRakiyaan khaalee samay par baat karatee hain/theen/hongee.
(v) raakesh do saal pahale shaadee kar chukaa hai/thaa/hogaa.
(vi) prreeti ne khelkood me hameshaa ruchi rakhee hai/thee/hogee.
(vii) use sab kuchh yaad aane lagaa hai/thaa/hogaa.
(viii) mai ke baad bahut garmee hone lagatee hai/thee/hogee.
(ix) vah har kaam ke liye pitaa ko yaad kiiyaar karataa hai/thaa/hogaa.
(x) suresh maan-baap kee kaaphee sevaa kar rahaa hai/thaa/hogaa.
(xi) majadooron kee haRataal hone vaalee ·hain/thee/hogee.
(xii) shaam tak baarish hone ko hai/thee/hogee.
(xiii) saralaa aatmahatyaa karane jaa rahee hailthee/hogee.

4. VP -> KM (! kmtype =ci +)    KKAR(!pred ∈ ^kr_list) (^kriyakar = !)
    (^pred = !vpred)
    (^kr_list = !kr_list)
    (^parsarg = !parsarg)
    (^kmtype = !kmtype)
    PGN2( = !)  TENSE( !tense = ci future) ( = !) PGN1( = !)

This rule states that a complex verb phrase is a sequence of a pre-verb; verbalizer, number-gender-person suffix, tense and number-gender-person suffix for tense. This rule accounts only for future tense construction. in this formation. The examples adhering to this rule are :

(i) ye log reetaa kee kaaphee madad karenge.
(ii) vah sonam se shaadee kareegaa.
(iii) laRakiyaan khaalee samay par baat karenge.
(iv) main khelkood me hameshaa ruchi rakhoongaa.
(v) use sab baaten yaad aayengee.

5. VP -> KM (! kmtype =ci +)    KKAR(!pred ∈ ^kr_list) (^kriyakar = !)
    (^pred = !vpred)
This rule states that a complex verb phrase is a sequence of a pre-verb, verbalizer and mood suffix. The examples adhering to this rule are:

(i) *gareebon kee madad karo.*

(ii) *aap hamako jaroor vaad rakhiyegaa.*

(iii) *usako sab vaad aaye.*

6. VP - > KM  

\((^\text{kmtype} =_{ci} +)^{\text{+}}\)  

KKAR\((^\text{pred} \in ^\text{kr_list})^{\text{+}}\)  

\((^\text{kr_list} = !)^{\text{+}}\)  

\((^\text{parsarg} = !)^{\text{+}}\)  

\((^\text{kmtype} = !)^{\text{+}}\)  

MOOD1\((^ = !)^{\text{+}}\)  

This rule states that a complex verb phrase is a sequence of a pre-verb, verbalizer, mood suffix and number-gender-person suffix. The examples adhering to this rule are:

(i) *raam mahan kee mushkil se sahaayataa kar sakaa.*

(ii) *sushama apanaa paath mushkil se vaad kar paaye.*

\((^\text{mood} =_{ci} \text{ability})^{\text{+}}\)  

\((^ = !)^{\text{+}}\)  

\((^\text{mood} =_{ci} \text{inability1})^{\text{+}}\)  

\((^ = !)^{\text{+}}\)  

\((^\text{mood} =_{ci} \text{inability3})^{\text{+}}\)  

\((^ = !)^{\text{+}}\)  

\((^\text{mood} =_{ci} \text{compulsion2})^{\text{+}}\)  

\((^ = !)^{\text{+}}\)  

\((^\text{mood} =_{ci} \text{ability1})^{\text{+}}\)  

\((^ = !)^{\text{+}}\)  

\((^\text{mood} =_{ci} \text{compulsion4})^{\text{+}}\)  

\((^ = !)^{\text{+}}\)  

\((^\text{mood} =_{ci} \text{possibility1})^{\text{+}}\)  

\((^ = !)^{\text{+}}\)
is vishay par bachchon se baat karate nahin banaa.

musjhe rohit par vishvaas karanaa paRaa.

7. VP  > KM  (! kmtype =$_d$ +)  KKAR(!pred $\in$ ^kr_list) (^kriyakar = !)

($^\text{pred} = !\text{vpred}$)

($^\text{kr_list} = !\text{kr_list}$)

($^\text{parsarg} = !\text{parsarg}$)

($^\text{kmtype} = !\text{kmtype}$)

MOOD2  ( !mood =$_d$ ability) (^ = !)  .PGN3(^ = !)

OR

( !mood =$_d$ inability1) (^ = !)

OR

( !mood =$_d$ inability3) (^ = !)

OR

( !mood =$_d$ compulsion2) (^ = !)

OR

( !mood =$_d$ compulsion4) (^ = !)

OR

(!mood =$_d$ possibility) (^ = !)

OR

(!mood =$_d$ possibility1) (^ = !)

TENSE( !tense =$_d$ ~future) (^ = !)  PGN1(^ = !)

This rule states that a complex verb phrase is a sequence of a pre-verb, verbalizer, mood suffix and number-gender-person suffix. The examples adhering to this rule are:

(i)  raam mohan kee mushkil se sahaayataa kar sakaai hai/thaa/hogaa.

(ii)  sushama apanaa paath mushkil se yaad kar paayee hai/thee/hogaa.

(iii)  is vishay par bachchon se baat karate nahin banaa hai/thaa/hogaa.

(iv)  mujhe rohit par vishvaas karanaa paRaa hai/thaa/hogaa.
8. VP -> KM (! ktype = c, +) → KKAR(!pred e ^kr_list) (= !) (^kriyakar = !)
   (^pred = !vpred)
   (^kr_list = !kr_list)
   (^parsarg = !parsarg)
   (^ktype = !ktype)

   MOOD2(!mood = c compulsion3) (= !)

This rule states that a complex verb phrase is a sequence of a pre-verb, verbalizer and mood suffix. The example adhering to this rule is:

   *hamen gareebon kee sahaayataa karane chaahiye.*

9. VP -> KM (! ktype = c, +) → KKAR(!pred e ^kr_list) (^kriyakar = !)
   (^pred = !vpred)
   (^kr_list = !kr_list)
   (^parsarg = !parsarg)
   (^ktype = !ktype)

   MOOD2 (!mood = c compulsion1) (= !)

   OR

   (!mood = c compulsion3) (= !)

   TENSE (!tense = c ~future) PGN1 (= !)
   (^mood = c compulsion1) (= !)

   OR

   (!tense = c past)

This rule states that a complex verb phrase is a sequence of a pre-verb, verbalizer, mood suffix, tense suffix and number-gender-person suffix. The examples adhering to this rule are:

   (i) *tumhen khelkood men bhaag lenaa hai/thaa/hogaa.*
   (ii) *hamen gareebon kee sahaayataa karane chaahiye thee.*
3.5 Aspect, Tense and Mood Suffixes

This section proposes LFG based rules with their associated functional equations to describe the structure of Tense, Aspect and mood suffixes.

The following rules describe the structure of Aspect suffix:

1. AS -> ta(\^aspect = imperfect)
   This rule states that an aspect suffix is imperfect aspect suffix. The example adhering to this rule is:
   
   \textit{raam pustak pRaRham hai.}

2. AS -> ya(\^aspect = perfect)
   This rule states that an aspect suffix is perfect aspect suffix. The example adhering to this rule is:

   \textit{raam ne khaana khaayaa.}

3. AS -> \phi(\^aspect = perfect)
   This rule states that an aspect suffix is imperfect aspect suffix. The example adhering to this rule is:

   \textit{raam ne pustak pRaRhee.}

4. AS -> rah(\^aspect = continuous)
   This rule states that an aspect suffix is continuous aspect suffix. The example adhering to this rule is:

   \textit{raam pustak pRah rahaa hai.}

5. AS -> ta PGN3(\^ = !) rah(\^aspect = continuous!)
   This rule states that an aspect suffix is a sequence of \textit{ta}, number-gender-person and \textit{rah} marker. The example adhering to this rule is:

   \textit{vah dinabh\text丞 khetlaaa rahaa hai.}

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6. AS -> ta  PGN3(^ = !) rahat(^aspect = habitual1)
This rule states that an aspect suffix is a sequence of ta, number-gender-person and rahat marker. The example adhering to this rule is:
   vah dinabhar khelataa rahataa hai.

7. AS -> ta  PGN3(^ = !) chal(^aspect = progressive1)
This rule states that an aspect suffix is a sequence of ta, number-gender-person and chal marker. The example adhering to this rule is:
   saritaa binaa ruke gaatee chalee.

8. AS -> ta  PGN3(^ = !) chalat(^aspect = progressive2)
This rule states that an aspect suffix is a sequence of ta, number-gender-person and rahat marker. The example adhering to this rule is:
   vah jabaradastee ghustaa chalataa hai.

9. AS -> ta  PGN3(^ = !) chal rah(^aspect = continuous2)
This rule states that an aspect suffix is a sequence of ta, number-gender-person and rah rah marker. The example adhering to this rule is:
   bachche raaste men khelate chal rahe hain.

10. AS -> ta  PGN3(^ = !) jaa(^aspect = progressive3)
This rule states that an aspect suffix is a sequence of ta, number-gender-person and jaa marker. The example adhering to this rule is:
   vah ek ghantaa tak veenaa bajaatee gayee.

11. AS -> ta  PGN3(^ = !) jaat(^aspect = progressive4)
This rule states that an aspect suffix is a sequence of ta, number-gender-person and jaat marker. The example adhering to this rule is:
   vah ghantaa tak tabalaa bajaataa jaataa.

12. AS -> ta  PGN3(^ = !) jaa rah(^aspect = continuous3)
This rule states that an aspect suffix is a sequence of ta, number-gender-person and
jaa rah marker. The example adhering to this rule is:

vah ek ghanTe se veenaa bajaatee jaa rahee hai.

13. AS -> ta  PGN3(^ = !)  aa(^aspect = progressive5)
This rule states that an aspect suffix is a sequence of ta, number-gender-person and aa marker. The example adhering to this rule is:

vah bas men sotaa aa gayaa.

14. AS -> ta  PGN3(^ = !)  aat(^aspect = progressive6)
This rule states that an aspect suffix is a sequence of ta, number-gender-person and aat marker. The example adhering to this rule is:

ve roj shaam ko bas men sotee aatee.

15. AS -> ta  PGN3(^ = !)  aay(^aspect = progressive7)
This rule states that an aspect suffix is a sequence of ta, number-gender-person and jaa marker. The example adhering to this rule is:

vah aaj bas men sotee aayee.

16. AS -> ta  PGN3(^ = !)  aa  rah(^aspect = continuous4)
This rule states that an aspect suffix is a sequence of ta, number-gender-person and aa rah marker. The example adhering to this rule is:

ye laRake door se bhagatae aa rahe hain.

17. AS -> chuk(^aspect = completive1)
This rule states that an aspect suffix is completive type. The example adhering to this rule is:

main khaanna khaa chukaa hoon.

18. AS -> chukat(^aspect = completive2)
This rule states that an aspect suffix is completive type denoted by suffix chukat. The example adhering to this rule is:

vah tab tak khaa chukataa.
19. AS -> \textit{rakh} (aspect = completive3)
This rule states that an aspect suffix is completive type and is denoted by \textit{rakh} suffix.
The example adhering to this rule is:
\textit{aaj usane roTee khaa rakhee hai.}

20. AS -> \textit{ne lag} (aspect = inceptive1)
This rule states that an aspect suffix is a sequence of \textit{ne}, \textit{lag} suffixes. The example adhering to this rule is:
\textit{bachche aate hee khaane lage.}

21. AS -> \textit{ne lagat} (aspect = inceptive2)
This rule states that an aspect suffix is a sequence of \textit{ne}, \textit{lagat} suffixes. The example adhering to this rule is:
\textit{vah chaar baje poojaa karne lagatee.}

22. AS -> \textit{ne vaal} (aspect = ingressive1)
This rule states that an aspect suffix is a sequence of \textit{ne}, \textit{vaal} suffixes. The example adhering to this rule is:
\textit{main kal haridvaar jaane vaalaa hoon.}

23. AS -> \textit{ne ko} (aspect = ingressive2)
This rule states that an aspect suffix is a sequence of \textit{ne}, \textit{ko} suffixes. The example adhering to this rule is:
\textit{thoRee der men das bajane ko hain.}

24. AS -> \textit{ne jaa rah} (aspect = ingressive3)
This rule states that an aspect suffix is a sequence of \textit{ne}, \textit{jaa} and \textit{rah} suffixes. The example adhering to this rule is:
\textit{abhee thoRee der men das bajane jaa rahe hain.}

25. AS -> \textit{ya PGN3} (aspect = continuous5)
This rule states that an aspect suffix is a sequence of \textit{ya}, and \textit{rah} marker. The
example adhering to this rule is:

\[ \text{vah din bhar soyaa rahaa.} \]

26. AS -> ya PGN3(\(^=\) !) rahat(\(^{\text{aspect = habitual2}}\))
This rule states that an aspect suffix is a sequence of ya, and rahat marker. The example adhering to this rule is:

\[ \text{vah din bhar soyaa rahataa hai.} \]

27. AS -> ya PGN3(\(^=\) !) kar(\(^{\text{aspect = progressive8}}\))
This rule states that an aspect suffix is a sequence of ya, and kar suffixes. The example adhering to this rule is:

\[ \text{too subah der tak mat soyaa kar.} \]

28. AS -> ta PGN3(\(^=\) !) karat(\(^{\text{aspect = habitual3}}\))
This rule states that an aspect suffix is a sequence of ya, and kar suffixes. The example adhering to this rule is:

\[ \text{vah subah der tak soyaa karatee.} \]

29. AS -> ye rakh(\(^{\text{aspect = progressive9}}\))
This rule states that an aspect suffix is a sequence of ye, and rakh suffixes. The example adhering to this rule is:

\[ \text{tum mere aane tak saare kaam kiye rakho.} \]

30. AS -> ye rakhat(\(^{\text{aspect = progressive10}}\))
This rule states that an aspect suffix is a sequence of ye, and rakhat suffixes. The example adhering to this rule is:

\[ \text{ramesh mere aane tak saare kaam kiye rakhataa.} \]

Following rules describe structure for number-gender-person suffixes that may occur after aspect suffixes.
31. PGN3 -> aa (gender = masculine) (number = singular)

This rule states that suffix PGN3 is aa, that denotes masculine gender, singular number and all three persons. The examples adhering to this rule are:

(i) main roTee khaataa hoon.
(ii) too roTee khaataa hai.
(iii) vah roTee khaataa hai.

32. PGN3 -> ee (gender = feminine) (number = singular)

OR

(gender = feminine) (number = plural)

This rule states that suffix PGN3 is ee, that denotes feminine gender, both the numbers and all three persons. The examples adhering to this rule are:

(i) main roTee khaatee hoon.
(ii) too roTee khaatee hai.
(iii) laRakee roTee khaatee hai.
(iv) ham roTee khaatee hain.
(v) tum roTee khaatee ho.
(vi) laRakiyaan roTee khaatee hain.

33. PGN3 -> e (gender = masculine) (number = plural)

OR

(gender = masculine) (number = singular) (person = 22)

OR

(person = 23) (number = singular)

This rule states that suffix PGN3 is e, that denotes masculine gender, plural number and all three persons. It also denotes second person and singular number. The examples adhering to this rule are:

(i) ham roTee khaate hain.
(ii) tum roTee khaate ho.
(iii) laRakee roTee khaatee hain.
(iv) aap chaaval khaate hain.
(v) tum chaaval khaate hain.
Rules to describe the structure of tense suffixes are:

1. TENSE $\rightarrow$ ha (tense = present)
   This states that a tense suffix consists of ha marker, which denotes present tense. The examples adhering to this rule are:
   (i) main roTee khaataa hoon.
   (ii) tum roTee khaate hq.
   (iii) laRakiyaan roTee khaatee hain.

2. TENSE $\rightarrow$ tha (tense = past)
   This rule states that tense suffix consists if tha marker, which denotes past tense. The examples adhering to this rule are:
   (i) main roTee khaataa thaa.
   (ii) tum roTee khaate the.
   (iii) laRakiyaan roTee khaatee theen.

3. TENSE $\rightarrow$ ga (tense = future)
   This rule states that a tense suffix consists of ga marker, which denotes future tense. The examples adhering to this rule are:
   (i) main roTee khaaoongaa.
   (ii) tum roTee khaoge.
   (iii) laRakiyaan roTee khaayengee.

4. TENSE $\rightarrow$ hooong (tense = presumptive) (person = 1) (number = singular)
   This rule states that tense suffix consists of hooong suffix, which is in first person and singular number. The examples adhering to this rule are:
   (i) main roTee khaataa hooongaa.
   (ii) main roTee khaatee hooongee.

5. TENSE $\rightarrow$ hog (tense = presumptive) (person = 3) (number = singular)
   OR
   (tense = presumptive) (person = 21) (number = singular)
This rule states that tense suffix consists of suffix hog. This suffix denotes different combinations of number and person as shown in the rule. The examples adhering to this rule are:

(i) vah roTee khaatee hogee.
(ii) too roTee khaataa hogaa.
(iii) tum roTee khaate hoge.
(iv) tum roTee khaate hoge.

6. TENSE $\rightarrow$ hong $(\text{tense} = \text{presumptive})$ $(\text{person} = 1)$ $(\text{number} = \text{plural})$

OR

$(\text{tense} = \text{presumptive})$ $(\text{person} = 3)$ $(\text{number} = \text{plural})$

OR

$(\text{tense} = \text{presumptive})$ $(\text{person} = 22)$ $(\text{number} = \text{singular})$

OR

$(\text{tense} = \text{presumptive})$ $(\text{person} = 22)$ $(\text{number} = \text{plural})$

This rule states that tense suffix consists of suffix hong. This suffix denotes different combinations of number and person as shown in the rule. The examples adhering to this rule are:

(i) ham roTee khaate honge.
(ii) ve roTee khaate honge.
(iii) aap roTee khaate honge.
(iv) aap roTee khaate honge.

The following rules describe structure for person/gender/number suffixes that may occur after tense suffixes.

7. PGN1 $\rightarrow$ oon$(\text{tense} = \text{present})$ $(\text{person} =1)$ $(\text{number}= \text{singular})$

This rule states that suffix oon denotes first person, singular number and present tense.
The examples adhering to this rule are:

(i) \textit{main roTee khaataa hoon.}

(ii) \textit{main roTee khaatee hoon.}

8. PGN1 $\rightarrow$ \textit{ain} ($^\text{tense}=\text{present}$)($^\text{person}=1$)($^\text{number}=\text{plural}$)

\textbf{OR}

($^\text{tense}=\text{present}$)($^\text{person}=3$)($^\text{number}=\text{plural}$)

\textbf{OR}

($^\text{tense}=\text{present}$)($^\text{person}=22$)($^\text{number}=\text{singular}$)

\textbf{OR}

($^\text{tense}=\text{present}$)($^\text{person}=23$)($^\text{number}=\text{plural}$)

This rule states that the suffix \textit{ain} denotes first, third and second person \textit{aap}, plural number and second person \textit{tum}, singular number. The tense is present. The examples adhering to this rule are:

(i) \textit{ham roTee khaate hain.}

(ii) \textit{ham roTee khaatee hain.}

(iii) \textit{ve roTee khaate hain.}

(iv) \textit{ve roTee khaatee hain.}

(v) \textit{aap roTee khaate hain.}

(vi) \textit{aap sab roTee khaate hain.}

9. PGN1 $\rightarrow$ \textit{ai} ($^\text{tense}=\text{present}$)($^\text{person}=21$)($^\text{number}=\text{singular}$)

\textbf{OR}

($^\text{tense}=\text{present}$)($^\text{person}=3$)($^\text{number}=\text{singular}$)

This rule states that suffix \textit{e} denotes third person, second person \textit{too}, singular number, and present tense. The examples adhering to this rule are:

(i) \textit{too roTee khaataa hai.}

(ii) \textit{too roTee khaatee hai.}

(iii) \textit{vah roTee khaataa hai.}

(iv) \textit{vah roTee khaataa hai.}
10. PGNI -> o  (^tense= present)(^person=23)(^number= singular)

OR

(^tense= present)(^person=23)(^number= plural)

This rule states that suffix o denotes second person tum, both the numbers, and present tense. The examples adhering to this rule are:

(i)  tum roTee khaate ho.
(ii) tum roTee khaatee ho.
(iii) tum sab roTee khaate ho.
(iv) tum sab roTee khaatee ho.

11. PGNI -> aa  (^tense= past)(^gender=masculine) (^number= singular)

OR

(^tense= presumptive)(^gender=masculine) (^number= singular)

OR

(^tense= future)(^gender=masculine) (^number= singular)

This rule states that suffix aa denotes masculine gender, singular number, and past, presumptive or future tense. The examples adhering to this rule are:

(i)  main roTee khaataa thaa.
(ii) too roTee khaataa thaa.
(iii) vah roTee khaataa thaa.
(iv) main roTee khaataa hooonga.
(v)  too roTee khaataa hogaa.
(vi) vah roTee khaataa hogaa.
(vii) main roTee khoonga.
(viii) too roTee khaayega.
(ix)  vah roTee khaayega.

12. PGNI -> e  (^tense= past)(^gender=masculine) (^number= plural)

OR

(^tense= presumptive)(^gender=masculine) (^number= plural)

OR

(^tense= future)(^gender=masculine) (^number= plural)
This rule states that suffix e denotes masculine gender, plural number, and past, future or presumptive tense. The examples adhering to this rule are:

(i) ham roTee khaate thg.
(ii) tum roTee khaate thaa.
(iii) ve roTee khaate thg.
(iv) ham roTee khaate hongg.
(v) tum roTee khaate hoge.
(vi) ve roTee khaate hongg.
(vii) ham roTee khaayenge.
(viii) tum roTee khaaoge.
(ix) ve roTee khaayenge.

13. PGN1 -> ee (\^tense= past)(\^gender=feminine) (\^number= singular)

OR

(\^tense= presumptive)(\^gender=feminine) (\^number= plural)

OR

(\^tense= future)(\^gender=feminine) (\^number= singular)

This rule states that suffix ee denotes feminine gender, singular number, and past, future or presumptive tense. The examples adhering to this rule are:

(i) main roTee khaatee thee.
(ii) too roTee khaatee thee.
(iii) vah roTee khaatee thee.
(iv) main roTee khaatee hooongee.
(v) too roTee khaatee hoge.
(vi) vah roTee khaatee hoge.
(vii) main roTee khaoongee.
(viii) too roTee khaayegee.
(ix) vah roTee khaayegee.

14. PGN1 -> een (\^tense= past)(\^gender=feminine) (\^number= plural)

OR

(\^tense= presumptive)(\^gender=feminine) (\^number= plural)
This rule states that suffix *een* denotes feminine gender, plural number, and past, future or presumptive tense. The examples adhering to this rule are:

(i) *ham roTee khaatee theen.*

(ii) *tum roTee khaatee theen.*

(iii) *ve roTee khaatee theen.*

(iv) *ham roTee khaatee hongeen.*

(v) *tum roTee khaatee hongeen.*

(vi) *ve roTee khaatee hongeen.*

(vii) *ham roTee khaayengeen.*

(viii) *tum roTee khaaogeen.*

(ix) *ve roTee khaayengeen.*

The following rule describe person/gender/number suffixes occurring just before future tense suffix.

15. PGN2 -> *oon* (*tense=* future) (*person=* 1) (*number=* singular)

This rule states that suffix *oon* denotes first person and singular number for both the genders. The examples adhering to this rule are:

(i) *main roTee khaaongaa.*

(ii) *main roTee khaaongee.*

16. PGN2 -> *e* (*tense=* future) (*person=* 21) (*number=* singular) or (*tense=* future) (*person=* 3) (*number=* singular)

This rule states that suffix *e* denotes third or second person *too,* singular number, and future tense. Absence of gender attribute in f-equations means the rule is applicable for both the genders. The examples adhering to this rule are:

(i) *too roTee khaaegaa.*

(ii) *too roTee khaaegee.*

(iii) *vah roTee khaaegee.*
(iv) vah roTee khaaengee.

17. PGN2 $\rightarrow$ en $(\text{tense} = \text{future})(\text{person}=1)(\text{number}=\text{plural})$

OR

$(\text{tense} = \text{future})(\text{person}=3)(\text{number}=\text{plural})$

OR

$(\text{tense} = \text{future})(\text{person}=22)(\text{number}=\text{singular})$

OR

$(\text{tense} = \text{future})(\text{person}=22)(\text{number}=\text{plural})$

This rule states that suffix en denotes either first person and plural number, third person and plural number, or second person aap in both numbers. Tense for all these combinations is future. The examples adhering to this rule are:

(i) ham roTee khaaengee.
(ii) ham roTee khaaengee.
(iii) ve roTee khaaenge.
(iv) ve roTee khaaengee.
(iv) aap roTee khaaenge.
(v) aap roTee khaaengee.

18. PGN2 $\rightarrow$ o $(\text{tense} = \text{future})(\text{person}=23)(\text{number}=\text{singular})$

OR

$(\text{tense} = \text{future})(\text{person}=23)(\text{number}=\text{plural})$

This rule states that suffix o denotes second person (tum), both the numbers and future tense. The examples adhering to this rule are:

(i) tum roTee khaaoge.
(ii) tum roTee khaaogee.
(iii) tum sab roTee khaaoge.
(iv) tum sab roTee khaaogee.

19. PGN2 $\rightarrow$ ie $(\text{tense} = \text{future})(\text{person}=22)(\text{number}=\text{singular})$

OR

$(\text{tense} = \text{future})(\text{person}=22)(\text{number}=\text{plural})$
This rule states that suffix _ie_ denotes second person (_aap_), both the numbers and future tense. The examples adhering to this rule are:

(i)  _aap roTee khaaiygaa._
(ii) _aap sab roTee khaaiygaa._


This rule states that suffix _ie_ denotes second person (_aap_), both the numbers, and future tense. The examples adhering to this rule are:

(i)  _aap roTee khaaiygaa._
(ii) _aap sab roTee khaaiygaa._

Rules to describe the structure of mood suffix are:


This rules states that the suffix _o_ denotes order for second person _tum_ in both the numbers. The examples adhering to this rule are:

(i)  _tum turant nikal jaaQ._
(ii) _tum sab jaldee lauT aao._


This rules states that the suffix _ie_ denotes order for second person _aap_ in both the numbers. For example

(i)  _aap turant nikal jaaiie._
(ii) _aap sab jaldee lauT aaiie._

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3. MOODI -> *naa* ((\(\text{person} = 23\))(\(\text{number} = \text{singular}\))(\(\text{mood} = \text{order}\))

OR

((\(\text{person} = 23\))(\(\text{number} = \text{plural}\))(\(\text{mood} = \text{order}\))

This rules states that the suffix *naa* denotes order for second person *tum* in both the numbers. The examples adhering to this rule are:

(i) *tum samay par davaa khaa lenaa.*
(ii) *tum sab jaloos men mat jaanaa.*

4. MOODI -> *iegaa* ((\(\text{person} = 22\))(\(\text{number} = \text{singular}\))(\(\text{mood} = \text{order}\))

OR

((\(\text{person} = 22\))(\(\text{number} = \text{plural}\))(\(\text{mood} = \text{order}\))

This rules states that the suffix *iegaa* denotes order for second person *aap* in both the numbers. The examples adhering to this rule are:

(i) *aap paanee peejiegaa.*
(ii) *aap sab kal aaiiegaa.*

5. MOODI -> *oon* ((\(\text{person} = 1\))(\(\text{number} = \text{singular}\))(\(\text{mood} = \text{order}\))

OR

((\(\text{person} = 1\))(\(\text{number} = \text{singular}\))(\(\text{mood} = \text{possibility}\))

This rules states that the suffix *oon* denotes either order or possibility for first person and singular number. The examples adhering to this rule are:

(i) *main abhee chalaa jaaoon.*
(ii) *shaayad main aaj jaaoon.*

6. MOODI -> *e* ((\(\text{person} = 3\))(\(\text{number} = \text{singular}\))(\(\text{mood} = \text{order}\))

OR

((\(\text{person} = 3\))(\(\text{number} = \text{singular}\))(\(\text{mood} = \text{possibility}\))

This rules states that the suffix *e* denotes either order or possibility for third person and singular number. The examples adhering to this rule are:

(i) *vah abhee chalaa jaag.*
(ii) *shaayad vah aaj hee jaag.*
7. MOOD1 -> en (\(^\text{person} = 1\))(\(^\text{number} = \text{plural}\))(\(^\text{mood} = \text{order}\))

OR

(\(^\text{person} = 1\))(\(^\text{number} = \text{plural}\)) (\(^\text{mood} = \text{possibility}\))

OR

(\(^\text{person} = 3\))(\(^\text{number} = \text{plural}\))(\(^\text{mood} = \text{order}\))

OR

(\(^\text{person} = 3\))(\(^\text{number} = \text{plural}\))(\(^\text{mood} = \text{possibility}\))

This rules states that the suffix en denotes either order or possibility for first or third person, and plural number. The examples adhering to this rule are:

(i) ham abhee chale jaen.
(ii) shaayad ham aaj hee jaen.
(iii) ve abhee chale jaan.
(iv) shaayad ve aaj hee jaen.

8. MOOD1 -> ho(\(^\text{person} = 3\))(\(^\text{number} = \text{singular}\))(\(^\text{mood} = \text{indefinite\_possibility}\))

This rules states that the suffix ho denotes indefinite\_possibility for third person and singular number. The example adhering to this rule is:

shaayad vah abhee jaataa ho.

9. MOOD1 -> hon(\(^\text{person} = 3\))(\(^\text{number} = \text{plural}\))(\(^\text{mood} = \text{indefinite\_possibility}\))

This rules states that the suffix hon denotes indefinite\_possibility for third person and plural number. The example adhering to this rule is:

shaayad ve abhee aatee hon.

10. MOOD2 -> sak(\(^\text{mood} = \text{ability}\))

This rules states that the suffix oon denotes ability. The examples adhering to this rule are:

(i) main angrejee paRh sakataa hoon.
(ii) ve urdoo likh sakate hain.

11. MOOD2 -> paa(\(^\text{mood} = \text{inability1}\))

This rules states that the suffix oon denotes inability. The examples adhering to this
rule are:

(i) main kal baajaar nahin jaa paayaa.
(ii) tum sab abhee tak hisaab nahin kar paaye.

12. MOOD2 -> yaa jaa(^mood = inability2)
This rules states that the suffix yaa jaa denotes inability. The examples adhering to this rule are:

(i) mujhase ye sab kaam nahin kiya jaataa.
(ii) tumase ek chammach davaa nahin piyee jaatee.

13. MOOD2 -> te nahin ban(^mood = inability3)
This rules states that the suffix te nahin ban also denotes inability. The examples adhering to this rule are:

(i) mujhase jaaRon kee subah likhate nahin banataa.
(ii) tumase ek kap chaay pilaate nahin banataa.
(iii) usase raat ko akele baahar jaate nahin banataa.

14. MOOD2 -> naa(^mood = compulsion1)
This rules states that the suffix naa denotes compulsion. The examples adhering to this rule are:

(i) mujhe aaj hee jaanaa.
(ii) tumhe kal tak ye kaam karanaa hai.
(iii) use keval haree sabjiyaan khaanee hain.

15. MOOD2 -> naa paR(^mood = compulsion2)
This rules states that the suffix naa paR also denotes compulsion. The examples adhering to this rule are:

(i) mujhe aaj hee jaanaa paReega.
(ii) tumhe kal tak ye kaam karanaa paReega.
(iii) use keval haree sabjiyaan khaane paReengee.
16. MOOD2 -> \textit{naa chahiye} (\textit{mood = compulsion3})
This rules states that the suffix \textit{naa chahiye} also denotes compulsion. The examples adhering to this rule are:

(i) mujhe aaj hee jaanaa \textit{chahiye}.
(ii) tumhe kal tak ye kaam kar denaa \textit{chahiye}.
(iii) use keval haree sabjiyaan khaanee \textit{chahiye}.

17. MOOD2 -> \textit{naa paR sak} (\textit{mood = possibility})
This rules states that the suffix \textit{naa paR sak} denotes possibility. The examples adhering to this rule are:

(i) mujhe aaj hee jaanaa \textit{paR sakaa} hogaa.
(ii) tumhe kal tak ye kaam karanaa \textit{paR sakaa} hogaa.
(iii) use keval haree sabjiyaan hee khaanee \textit{paR sakee} hongee.

18. MOOD2 -> \textit{sakat} (\textit{mood = ability1})
This rules states that the suffix \textit{sakat} denotes also ability. The examples adhering to this rule are:

(i) main tumhe ye pustak nahi de \textit{sakataa} hoon.
(ii) tumhe raakesh peeT \textit{sakataa}.
(iii) vah apanee pustak udhaar de \textit{sakataa} hai.

19. MOOD2 -> \textit{naa paRat} (\textit{mood = compulsion4})
This rules states that the suffix \textit{naa paRat} also denotes compulsion. The examples adhering to this rule are:

(i) mujhe saambhar jabardaste khaanaa \textit{paRataa} hai.
(ii) tumhe hee ye sab kaam karanaa \textit{paRataa} hogaa.
(iii) use roj shaam·ko baajaar jaanaa \textit{paRataa} hai.

20. MOOD2 -> \textit{naa paR sakat} (\textit{mood = possibility1})
This rules states that the suffix \textit{naa paR sakat} denotes possibility. The examples adhering to this rule are:

(i) mujhe aaj hee jaan\textit{aa paR sakataa} hai.
(ii) tumhe kal tak ye kaam par sakataa hai.
(iii) use keval hari sabjiyaan hee khaane par sakatee hain.

3.6 Lexical Entry for verbs

Hindi verb roots are inflected by number, gender, person, aspect, and tense or mood suffixes. The roots first take only perfect or imperfect aspect marker, then they take number and gender markers. Verb roots are inflected by tense markers only in future tense. After tense inflection, it is also inflected by number, gender and person markers. In imperative sentence, verb roots are inflected by mood, number and person markers.

The lexical entry of a Hindi verb entry contains the root word and the associated morphological, syntactic, and semantic information. The morphological information consists of suffixes which a verb root can take. The syntactic information consists of category of the root, number, gender, person, aspect, tense or mood. Semantic information of a verb entry contains predicate of the verb which is very crucial in language processing. These are represented in the form of functional equations. The lexical entry may also contain information about the mapping between grammatical functions and karakas. The following are the examples for lexical entry of a verb root.

```
khaa : verb
  ^number = singular
  ^person = first
  ^predicate = 'khaa<subject, object>'
  ^type = transitive

so : verb
  ^number = singular
  ^person = first
  ^predicate = 'so<subject>'
  ^type = intransitive

de : verb
  ^number = singular
  ^person = first
  ^predicate = 'de<subject, object, iobject>'
  ^type = ditransitive
```