

en

Fourth Asia Pacific Linguistics Olympiad

10 – 24 April 2022

Solutions

Problem 1.

1. Sentence structure:	V_i (intransitive):	$S_i V$
	V_t (transitive):	$S_t V O$

2. Noun structure:	S _i or O S _t	
	singular	STEM hē
	dual	STEM -ra STEM -rā

3. Verb structure: TENSE—SUBJ—(OBJ)—CLASS—STEM

• TENSE =	<table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td></td><td style="padding: 2px;">V_i</td><td style="padding: 2px;">V_t</td></tr> <tr> <td>Tense I</td><td style="padding: 2px;">ka-</td><td></td></tr> <tr> <td>Tense II</td><td style="padding: 2px;">jy-</td><td style="padding: 2px;">∅</td></tr> </table>		V _i	V _t	Tense I	ka-		Tense II	jy-	∅	Tense I = future	
	V _i	V _t										
Tense I	ka-											
Tense II	jy-	∅										
Tense II =	$\begin{cases} \text{present} & (\text{V} = \text{stative}) \\ \text{perfect} & (\text{V} = \text{dynamic}) \end{cases}$											

• SUBJ , OBJ =	<table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td></td><td style="padding: 2px;">S_i or O</td><td style="padding: 2px;">S_t</td></tr> <tr> <td>1st person</td><td style="padding: 2px;">ra-</td><td style="padding: 2px;">ri-</td></tr> <tr> <td>2nd person</td><td style="padding: 2px;">a-</td><td style="padding: 2px;">ka-</td></tr> <tr> <td>3rd person</td><td style="padding: 2px;">∅</td><td style="padding: 2px;">ti-</td></tr> </table>		S _i or O	S _t	1st person	ra-	ri-	2nd person	a-	ka-	3rd person	∅	ti-	singular	∅	
	S _i or O	S _t														
1st person	ra-	ri-														
2nd person	a-	ka-														
3rd person	∅	ti-														
dual	mē-															

• CLASS =	<table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td></td><td style="padding: 2px;">S_i or O</td></tr> <tr> <td>grains</td><td style="padding: 2px;">sy-</td></tr> <tr> <td>fruit</td><td style="padding: 2px;">kua-</td></tr> <tr> <td>otherwise</td><td style="padding: 2px;">∅</td></tr> </table>		S _i or O	grains	sy-	fruit	kua-	otherwise	∅			
	S _i or O											
grains	sy-											
fruit	kua-											
otherwise	∅											

• STEM:

– V_i :	$\begin{cases} \emptyset & \text{'be ripe'} \\ rāpio & \text{'be warm' } \sim \text{'be sick'} \\ rāprâ & \text{'be painted' } \sim \text{'be red'} \end{math> $			stative
– V_t :	$\begin{cases} piâ & \text{'grow'} \\ tê & \text{'fall'} \\ tōpy & \text{'buy'} \\ kâ & \text{'cut'} \\ sa & \text{'bite'} \end{cases}$			dynamic

- | | |
|-----------------------------------|---------------------------------|
| (1) You two have fallen. | (5) prī hē tisykâ kiorīpê |
| (2) The genipap is ripe. | (6) mōsyra jymēsyrāprâ |
| (3) You two have bitten the rice. | (7) yôriti hē timēkuasa piutîra |
| (4) mararâ timēkuatōpy kwati | (8) īkjē karapiâ |

Problem 2.

1. Possession:		1st person	2nd person	3rd person	
		singular	ta-	p <u>u</u> -	n <u>u</u> -
	plural		wa-	hu-	na-

• a- → $\begin{cases} e & \text{before } P\{e\ i\} \\ o & \text{before } T \\ e & \text{before } H\{e\ i\} \\ o & \text{before } H\{o\ u\} \end{cases}$ u- → $\begin{cases} i & \text{before } P\{e\ i\} \\ u & \text{before } T \\ v & \text{before } H \end{cases}$

• V- + V → V: (e.g. pu- + uli:hana → pu:li:hana)

2. Stress:	$\begin{cases} 'CV: \dots \\ 'CVV \dots \\ CV [C \neq ?] V \dots \\ CV?V [CV] \dots \end{cases}$
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Abbreviations
V = vowel; C = consonant;
P = labials {p, m};
T = coronals {t, n, s, f};
H = dorsals {h, ?} or Ø

- (a) ne ['me] ?erainpala wa ['se] ?eru?u
 to ['so] so ne ['pi] hana
 ha?a ['la] in ['pu: li:hana
 nu ['muu] liala huu ['fe] ?in
 huu ['tou] ta ['no:] ?ui

- (b) wu'satfiraluu → wu'satfiraluu
 hehe'_ruu → he'_heruu

- (c) 1. *your(SG) food for the trip*
 2. *your(PL) stepfather*
 3. *my grandma*
 4. *his lie or their lie*
 5. *their suffering*

- (d) 6. 'we: ?iraka
 7. no'touta
 8. 'ni:ja:suu
 9. te'pe?e
 10. 'taulihana
 11. hu'funu:

Problem 3.

1. Stress: $(\sigma) \underbrace{\acute{\sigma}\sigma}_{\times k}$

* Syllable structure: $\sigma = (\mathbf{C})\mathbf{V}$
– C: consonant; V: vowel

2. Sentence structure: $(S) O V$

3. Verb structure:

(i) $\boxed{\text{SUBJ}} - \boxed{\text{STEM}} - \boxed{\text{TENSE}}$

(ii) $\boxed{X} - \boxed{\text{SUBJ}} - \boxed{\text{STEM}} - \boxed{\text{TENSE}}$

– $\boxed{\text{STEM}} =$

$\left\{ \begin{array}{ll} \text{hijara} & \text{'speak'} \\ \text{kaba} & \text{'eat'} \\ \text{kakatoma} & \text{'look'} \\ \text{karawato} & \text{'wait for'} \\ \text{katoma} & \text{'fight'} \\ \text{kijo} & \text{'chase'} \\ \text{wata} & \text{'grab'} \end{array} \right.$

* S = masculine: ...a → ...e

– $\boxed{\text{STEM}} = \text{na}$

* S = masculine: na → ne

– $\boxed{X} = \left\{ \begin{array}{ll} \text{jaka} & \text{'walk'} \\ \text{siba} & \text{'find'} \end{array} \right.$

feminine human female pronouns
kerewe 'sloth'
masculine human male
bijo 'spider monkey'
jomee 'jaguar'

– $\boxed{\text{SUBJ}} = \left\{ \begin{array}{ll} \text{o-} & \text{1st person singular} \\ \text{ti-} & \text{2nd person singular} \\ \emptyset & \text{otherwise} \end{array} \right.$

	S = masculine	S = feminine
past	$-\boxed{\text{hi}}-\text{ri}$	$-\boxed{\text{ha}}-\text{ro}$
present	\emptyset	\emptyset
intend to ...	$-\boxed{\text{hi}}-\text{bona}$	$-\boxed{\text{ha}}-\text{bone}$

* $\boxed{\text{SUBJ}} - \boxed{\text{STEM}} = \left\{ \begin{array}{ll} \sigma \times (2n) & \rightarrow \boxed{\text{hi}} \quad \boxed{\text{ha}} \\ \sigma \times (2n + 1) & \rightarrow \cancel{\boxed{\text{hi}}} \quad \cancel{\boxed{\text{ha}}} \end{array} \right.$

- (a) 10. *The man eats the sloth.*
 11. *The jaguar fought your(sg) son.*
 12. *The woman speaks to my grandmother.*
 13. *My son intends to eat the pineapple.*

- (b) 21. jáka tínaháro
 22. téra ókakátomáro
 23. keréwe ówa watáhabóne
 24. bíjo méra katómébóna

Problem 4.

	α		β		γ
aempty	= 1		ptae	= 6	or = 36 (6^2)
ynaoaempty	= 2		tarwmpao	= 12	or = 216 (6^3)
ylla	= 3		ntamnao	= 18	or = 1296 (6^4)
eser	= 4		wramaekr	= 24	⋮
tamp	= 5		ptae wramaekr	= 30	

- $\boxed{\alpha \ \beta} = \beta + \alpha$ • $\alpha_4 \cdot 6^4 + \alpha_3 \cdot 6^3 + \alpha_2 \cdot 6^2 + \beta + \alpha_1 =$
- $\boxed{\gamma \ \alpha} = \alpha \cdot \gamma$ ($\alpha > 1$) $\boxed{[ntamnao \ \alpha_4] \ [tarwmpao \ \alpha_3] \ [\alpha_1] \ [\beta] \ [ptae \ \alpha_2]}$

- (a) – ynaoaempty ptae $\implies 2 + 6 = 8$ or $2 + 36 = 38$ (ptae = 6 or 36)
- [tarwmpao ynaoaempty] [ptae ynaoaempty] $\implies 216 \cdot 2 + 36 \cdot 2 = 504$
- or [tarwmpao] [ynaoaempty] [ptae ynaoaempty] $\implies 216 + 2 + 36 \cdot 2 = 290$
- (b) (1) $215 - 22 = 193$ A = $193 = \text{aempty tarwmpao ptae tamp}$
 (2) $111 + 105 = 216$ B = $105 = \text{ylla ptae wramaekr ptae ynaoaempty}$
 (3) $54 \times 28 = 1314 + 198$ C = $198 = \text{ntamnao ptae tamp}$
- (c) tarwmpao ylla ptae $216 + 3 + 6 = 225$
 or $216 + 3 + 36 = 255$
 or $216 \cdot 3 + 6 = 654$
 or $216 \cdot 3 + 36 = 684$

The remainder of this page is intentionally left blank.

Problem 5.

1. Sentence structure: $(S) \rightarrow O \rightarrow V$

2. Verb structure:

– affirmative:

$\left\{ \begin{array}{c} (\text{STEM}) \rightarrow (\text{TENSE}) \rightarrow X_S \\ (\text{STEM}) \rightarrow i \text{ banghw} \rightarrow (\text{TENSE}) \rightarrow X_S \end{array} \right.$	$S = \text{SG or PL}$
$\left\{ \begin{array}{c} (\text{STEM}) \rightarrow ras \\ (\text{STEM}) \rightarrow i \text{ banghwras} \end{array} \right. \quad \left((\text{TENSE}) \rightarrow X_S \right)$	$S = \text{PL}$

– negative:

$\left\{ \begin{array}{c} (\text{STEM}) \rightarrow ras \\ (\text{STEM}) \rightarrow i \text{ banghwras} \end{array} \right. \quad \left((\text{TENSE}) \rightarrow X_S \right)$	$S = \text{SG or PL}$
$\left\{ \begin{array}{c} (\text{STEM}) \rightarrow ras \\ (\text{STEM}) \rightarrow i \text{ banghwras} \end{array} \right. \quad \left((\text{TENSE}) \rightarrow X_S \right)$	$S = \text{PL}$

• $(\text{TENSE}) =$	present future	
	affirmative	i ai
negative	Ø kai	

3. Possession: $(\text{Poss}) \rightarrow Y_{\text{Poss}} \rightarrow N \rightarrow Z_{\text{Poss}}$ * ... a + $Z_{\text{Poss}} \rightarrow \dots \alpha Z_{\text{Poss}}$

	S / Poss	O	X	Y	Z
1 SG	yang	ai	-sna	Ø	-ki
1 PL (1+3)	yang nani	mai	-sma		-kam
2 SG	man	mai	-sma	wan-	-ka
2 PL	man nani	wan	-sa		
1 PL (1+2)	yawan	wan	-sa	ai-	-ka
3 SG	witin	Ø	-sna		
3 PL	witin nani	Ø	-sma	-kam	-kam

Abbreviations

1 = 1st person

2 = 2nd person

3 = 3rd person

SG = singular

PL = plural

Poss = possessor

(...) = optional

(a) 14. You(SG) don't cook our(1+2) horse.

15. $\left\{ \begin{array}{l} \text{He will see his horse. / He will see their horse.} \\ \text{We(1+2) will see his horse. / They will see his horse.} \\ \text{His horse will see him. / His horse will see them.} \end{array} \right.$

16. $\left\{ \begin{array}{l} \text{We(1+2) will not detest the snake. / They will not detest the snake.} \end{array} \right.$

(b) 17. Yang mai plikras (sna).

18. $\left\{ \begin{array}{l} \text{Yang nani kaikras (kaisna).} \\ \text{Yang nani kaiki banghwras (kaisna).} \end{array} \right.$
19. $\left\{ \begin{array}{l} \text{(Yawan) man nani pyutkam kulkaisa.} \\ \text{(Yawan) man nani pyutkam kulki banghwaisa.} \end{array} \right.$
20. $\left\{ \begin{array}{l} \text{(Man nani) yawan wanbatanka prukisma.} \\ \text{(Man nani) yawan wanbatanka pruki banghwisma.} \end{array} \right.$