

Twentieth International Linguistics Olympiad

Bansko (Bulgaria), 23–29 July 2023

Individual Contest Solutions

Problem 1.

		○	→
●→●		<i>I saw (it)</i>	<i>I see (it)</i>
↑ ●		<i>I was seen</i>	<i>I am being seen</i>

1st person sg	○	→	3rd person sg	○	→
●→●	-n'	in-	●→●	-y'	—
↑ ●	in-	in-	↑ ●	-∅	a-

1. →:

- $-CV \rightarrow -C'V$ ($\text{ʃ} \rightarrow \text{ts}'$);
- $-V_1CC'V_2- \rightarrow -V_1CV_XC'V_2-$, $V_X = (V_1 = V_2) \mid \mathbf{a}$

2. ↑
●:

- $-? \quad (-C'V \rightarrow -CV \mid _ -?);$
- ○: $(C)VVCV- \rightarrow (C)\bar{V}VCV-$

3. • $\mathbf{n} \rightarrow \mathbf{m} \mid _ \{\mathbf{p}, \mathbf{p}'\}$
• $\mathbf{n} \rightarrow \mathbf{\eta} \mid _ \{\mathbf{k}, \mathbf{k}'\}$

4. $\langle \mathbf{p}, \mathbf{t}, \mathbf{k} \rangle \rightarrow \langle \mathbf{b}, \mathbf{d}, \mathbf{g} \rangle \mid \{\mathbf{m}, \mathbf{n}, \mathbf{\eta}\} _$

3. $\mathbf{n}' \rightarrow \mathbf{\eta}, \mathbf{y}' \rightarrow \mathbf{y} \mid \mathbf{c}'\mathbf{v} _$

(a)

	Form 1	Form 2	Translation
15.	netkay'	innetak'a	push
16.	kiri'y'	iggi'r'i	pull
17.	p'uhruy'	imp'uhur'u	make holes
18.	her'oy	inher'o	smooth out

(b)

39.	her'oŋ	<i>I smoothed (it) out</i>
40.	iniŋpa?	<i>I left</i>
41.	apla?	<i>it was opened</i>
42.	ŋur'uy	<i>it chose (it)</i>
43.	pirin'	<i>I saw (it)</i>
44.	iŋŋawats'a	<i>I plant (it)</i>
45.	k'aani?	<i>it was trapped</i>
46.	imp'ihana?	<i>I leap</i>
47.	ahika?	<i>it is being sewn, woven</i>
48.	inipla?	<i>I was bathed</i>

- Word order:

- S V DO (IO) \equiv DO ^SV (IO) (S_(noun))
(S = subject; V = predicate (verb);
DO = direct object; IO = indirect object [-**mokaru**])
-

	1st person sg	2nd person sg	3rd person sg	
			(m)	(f)
possessor = subject	n(I)-	p(I)-	(I)-	u-
IO; DO ($\neg\exists$ IO)	-nu		-ry	-ru

$$(I) = \begin{cases} i & \text{--- } \{nh, tx, x\} i \\ y & \text{--- } C \\ \emptyset & \text{--- } V \end{cases} ; n > nh \mid \text{--- } i$$

body part	¬ possessed	-txi (-y > -ĩ __ -txi)
(noun)	possessed	-te

- (a) 17. **uwa xinhikaru sytu** — *She remembered the woman.*
 18. **txipary nhinhikary** — *I ate the banana.*
 19. **kyky aikute ppsykary ywamukary** — *You_{sg} gave the man's house to him.*
- (b) 20. **uwa mynary kanawa ximakymukary**
kanawa umynary ximakymukary } — *She brought the canoe to the fish (sg).*
- (c) 21. *You_{sg} found the house.* — { **aiku papukary**
pita apukary aiku
22. *I brought your_{sg} canoe to the girl.* — { **pykanawate nymynaru hātakurumukary**
nuta mynaru pykanawate hātakurumukary
23. *He brought your_{sg} water to me.* — { **pīpurāâte ymynanu nutamukary**
ywa mynanu pīpurāâte nutamukary
24. *The man drank the girl's blood.* — { **hātakuru herēka ātary kyky**
kyky ātary hātakuru herēka
25. *I remembered the eye.* — { **ukītxi nhixinhikary**
nuta xinhikary ukītxi
26. *You_{sg} ate my banana.* — { **nhitxiparyte pinhikary**
pita nhikary nhitxiparyte

Problem 3.

1. subject:

- **nak** 1st person
- **o** 2nd person sg
- **e** 2nd person pl

2. • **b** ‘really’

• **bat** ‘Aw, ——.’

• **bam** ‘Oh, ——!’

3. **a** (subject = 3rd person sg)

4. **um** ‘in vain’

5. **e** {subject, object} = 1st person pl

root = ...C↑C⁺

object:

- **ana** 1st person
- **aya** 2nd person sg
- **a** 2nd person pl
- **e** 3rd person sg

kb > **mb**; **e o** > **i u** | **_** C* ∨ C* ∨ C* #

(a) 18. **e-yuyanah** — *We shuddered.*

19. **ba-ihwin** — *He really cried.*

20. **nabum-kisayah** — *I really spat on you_{sg} in vain.*

21. **bat-yadawn** — *Aw, he left you_{pl} behind.*

22. **ubamum-kolewn** — *Oh, you_{sg} laughed at him in vain!*

(b) 23. *He floated to the surface.* — **a-tameb**

24. *Aw, you_{sg} returned.* — **obat-dahetok**

25. *Oh, I silenced him!* — **nabam-hoyeb**

26. *He really chased us away.* — **be-utanab**

27. *You_{pl} really spat on us in vain.* — **ibume-kisanah**

Problem 4. S = subject, O = object

- | | |
|--------------|--|
| ni- : | 2nd person $\notin \{S, O\}$
\wedge 1st person $\in \{S, O\}$ |
| ki- : | 2nd person $\in \{S, O\}$ |

+ root +

S	O	
1 2	3	-ā(w)
1	2	-it-in
2	1	-in
3	1 2	-ik(o w)

+

1st person pl $\in \{S, O\}$:	- (n)ān
2nd person pl $\in \{S, O\}$ \wedge 1st person pl $\notin \{S, O\}$:	- (ā)wāw

+

3rd person pl $\in \{S, O\}$:	- (w)ak
--------------------------------	----------------
- | | |
|----|--------|
| ē- | as ... |
| ∅- | if ... |

} + root +

S	O	
1 2	3	-ā(w)
3	1 2	-ik(o w)

+

{S, O}	
{2nd person pl, 3rd person sg} :	- yēk
{1st person pl, 3rd person pl} :	- yāhkāw
	etc.

- (a) 26. ē-wāpamikoyēk — *as he sees you_{pl}*
 27. ninakinikonān — *he stops us*
 28. kikakwēcimāwāw — *you_{pl} ask him*
 29. kiwīcīhitināwāw — *I help you_{pl}*
- (b) 30. *if we ask them* — kakwēcimāyāhkāwī
 31. *they challenge you_{pl}* — kimawinēskomikowāwak
 32. *they help me* — niwīcīhikwak
 33. *you_{sg} see them* — kiwāpamāwak
 34. *I stop you_{pl}* — kinakinītināwāw

Problem 5.

- $$\left[\begin{array}{l} 400 : \text{kampwoo} \\ \alpha_1 \times 400 : \text{kampwōhii} \end{array} \alpha_1 \right] + \left[\begin{array}{l} 80 : \text{ḡkuu} \\ \alpha_2 \times 80 : \text{ḡkwuu} \end{array} \alpha_2 \right] + \left[\begin{array}{l} 20 : \text{beṗjaaga} \\ \alpha_3 \times 20 : \text{be-}\alpha_3 \end{array} \right] +$$

$$[10 : \text{ke}] + [5] + [\beta], 2 \leq \alpha_{1,2,3} \leq 4, 1 \leq \beta \leq 4$$
- +: na
- | | | | |
|----|----------|--|-----------------------------------|
| 1: | nīḡkin | | -nīḡkin \rightarrow -ni |
| 2: | shuunni | | |
| 3: | taanre | | |
| 4: | sicyēere | | -sicyēere \rightarrow -ricyēere |
| 5: | kaṅkuro | | kaṅkuro na \rightarrow baa- |

- (a) kampwōhii shuunni na ke 810
 ḡkuu na baataanre 88
- (b) 15 ke na kaṅkuro
 109 ḡkuu na beṗjaaga na baaricyēere
 152 ḡkuu na beetaanre na ke na shuunni
 403 kampwoo na taanre
 1534 kampwōhii taanre na ḡkwuu sicyēere na ke na sicyēere