

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 → -C'V (ɕ' → ts');
- -V₁CC'V₂- → -V₁CV_XC'V₂-, V_X = (V₁ = V₂) | a

2. ↑
●:

- -ʔ (-C'V → -CV | __ -ʔ);
- ○: (C)VCV- → (C)V̄VCV-

- 4. • n → m | __ {p, p'}
- n → ŋ | __ {k, k'}

5. ⟨p, t, k⟩ → ⟨b, d, g⟩ | {m, n, ŋ} __

3. n' → ŋ, y' → y | C'V __

(a)

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

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(b)

39.	her'oŋ	<i>I smoothed (it) out</i>
40.	iniŋpaʔ	<i>I left</i>
41.	aplaʔ	<i>it was opened</i>
42.	ŋur'uy	<i>it chose (it)</i>
43.	pirin'	<i>I saw (it)</i>
44.	iŋsawats'a	<i>I plant (it)</i>
45.	k'aaniʔ	<i>it was trapped</i>
46.	imp'ihanaʔ	<i>I leap</i>
47.	ahikaʔ	<i>it is being sewn, woven</i>
48.	iniplaʔ	<i>I was bathed</i>

Problem 2.

- Word order:

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

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possessor	possessed
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	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

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

-

body part	\neg possessed	-txi (-y > -i $_$ -txi)
(noun)	possessed	-te

- (a) 17. **uwa xinhikaru sytu** — *She remembered the woman.*
 18. **txipary nhinhikary** — *I ate the banana.*
 19. **kyky aikute pysykary ywamukary** — *You_{sg} gave the man's house to him.*
- (b) 20.

uwa mynary kanawa ximakymukary	}	— <i>She brought the canoe to the fish (sg).</i>
kanawa umynary ximakymukary		

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- (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.* — { pīpurāāte ymynanu nutamukary
ywa mynanu pīpurāāte 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

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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* V C* V 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**

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Problem 4. S = subject, O = object

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

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

+ root +

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

+ 3rd person pl \in {S, O} : -(w)ak

S	O	
1 2	3	-ā(w)
3	1 2	-ik(o w)

+ root +

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

• $\left. \begin{array}{l} \bar{e}- \text{ as } \dots \\ \emptyset- \text{ if } \dots \end{array} \right\}$

- (a) 22. \bar{e} -wāpamikoyēk — *as he sees you_{pl}*
 23. ninakinikonān — *he stops us*
 24. kikakwēcimāwāw — *you_{pl} ask him*
 25. kiwīcihitināwāw — *I help you_{pl}*
- (b) 26. *if we ask them* — kakwēcimāyāhkwāwi
 27. *they challenge you_{pl}* — kimawinēskomikowāwak
 28. *they help me* — niwīcihikwak
 29. *you_{sg} see them* — kiwāpamāwak
 30. *I stop you_{pl}* — kinakinitināwāw

Problem 5.

• $\left[\begin{array}{l} 400 : \text{kampwoo} \\ \alpha_1 \times 400 : \text{kampw} \alpha_1 \end{array} \right] + \left[\begin{array}{l} 80 : \eta\text{kku} \\ \alpha_2 \times 80 : \eta\text{k} \alpha_2 \end{array} \right] + \left[\begin{array}{l} 20 : \text{be}\eta\text{jaaga} \\ \alpha_3 \times 20 : \text{be-} \alpha_3 \end{array} \right] +$
 $[10 : \text{k}\epsilon] + [5] + [\beta], 2 \leq \alpha_{1,2,3} \leq 4, 1 \leq \beta \leq 4$

• +: na

- | | |
|-------------|-----------------------|
| 1: niḡkin | -niḡkin → -ni |
| 2: shuunni | |
| 3: taanre | |
| 4: sicyεere | -sicyεere → -ricyεere |
| 5: kaḡkuro | kaḡkuro na → baa- |

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- (a) **kampwɔhii shuunni na ke** 810
ɲkuu na baataanre 88
- (b) 15 **ke na kaɲkuro**
109 **ɲkuu na beɲjaaga na baaricyɛɛre**
152 **ɲkuu na beetaanre na ke na shuunni**
403 **kampwoo na taanre**
1534 **kampwɔhii taanre na ɲkwuu sicyɛɛre na ke na sicyɛɛre**