

en

# 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-	● → ●
↑ ↓	in-	in-	↑ ↓
			-y' —
			-∅ a-

1. →:

- -CV → -C'V (*s'* → *ts'*);
- -V<sub>1</sub>CC'V<sub>2</sub>- → -V<sub>1</sub>CV<sub>X</sub>C'V<sub>2</sub>-, V<sub>X</sub> = (V<sub>1</sub> = V<sub>2</sub>) | a

2. :

- -? (-C'V → -CV | \_\_ -?);
- ○: (C)VCV- → (C)̄V̄VCV-

3. n' → y, y' → y | C'V \_\_

3. • n → m | \_\_ {p, p'}
- n → y | \_\_ {k, k'}

4. ⟨p, t, k⟩ → ⟨b, d, g⟩ | {m, n, y} \_\_

(a)

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

(b)

39.	her'oy inişpa? apla?	<i>I smoothed (it) out</i> <i>I left</i> <i>it was opened</i>
40.		
41.		
42.	şur'uy	<i>it chose (it)</i>
43.	pirin'	<i>I saw (it)</i>
44.	inşawats'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>

**Problem 2.**

- Word order:

- S V DO (IO)  $\equiv$  DO  $^S$ V (IO) ( $S_{(\text{noun})}$ )  
 (S = subject; V = predicate (verb);  
 DO = direct object; IO = indirect object [-mokaru])
- [possessor] [possessed]

- |                             | 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 |

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

- |           |                  |                                 |
|-----------|------------------|---------------------------------|
| body part | $\neg$ possessed | -txi ( $-y > -i \mid \_ -txi$ ) |
| (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<sub>sg</sub> 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<sub>sg</sub> found the house.* — { aiku papukary  
 pita apukary aiku  
 22. *I brought your<sub>sg</sub> canoe to the girl.* — { pykanawatenymynaruhātakurumukary  
 nuta mynarupykanawatehātakurumukary  
 23. *He brought your<sub>sg</sub> water to me.* — { pīpurāāteymynanunutamukary  
 ywa mynanupīpurāātenutamukary  
 24. *The man drank the girl's blood.* — { hātakuruherēkāātarykyky  
 kykyātaryhātakuruherēkā  
 25. *I remembered the eye.* — { ukītxi nhixinhikary  
 nutaxinhikaryukītxi  
 26. *You<sub>sg</sub> ate my banana.* — { nhitxiparytepinhikary  
 pitanhikarynhitxiparyte

**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<sup>+</sup>

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. **nambum-kisayah** — *I really spat on you<sub>sg</sub> in vain.*  
21. **bat-yadawn** — *Aw, he left you<sub>pl</sub> behind.*  
22. **ubamum-kolewn** — *Oh, you<sub>sg</sub> laughed at him in vain!*
- (b) 23. *He floated to the surface.* — **a-tameb**  
24. *Aw, you<sub>sg</sub> returned.* — **obat-dahetok**  
25. *Oh, I silenced him!* — **nambam-hoyeb**  
26. *He really chased us away.* — **be-utanab**  
27. *You<sub>pl</sub> really spat on us in vain.* — **ibume-kisanah**

**Problem 4.** S = subject, O = object

		S	O																
•	<table border="1"> <tr> <td><b>ni-</b>: 2nd person <math>\notin \{S, O\}</math></td> </tr> <tr> <td><math>\wedge</math> 1st person <math>\in \{S, O\}</math></td> </tr> </table>	<b>ni-</b> : 2nd person $\notin \{S, O\}$	$\wedge$ 1st person $\in \{S, O\}$	+ root +	<table border="1"> <tr> <td>1 2</td> <td>3</td> <td>-ā(w)</td> </tr> <tr> <td>1</td> <td>2</td> <td>-it-in</td> </tr> <tr> <td>2</td> <td>1</td> <td>-in</td> </tr> <tr> <td>3</td> <td>1 2</td> <td>-ik(o w)</td> </tr> </table>	1 2	3	-ā(w)	1	2	-it-in	2	1	-in	3	1 2	-ik(o w)	+	
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- (a) 26. ē-wāpamikoyēk — as he sees you<sub>pl</sub>
- 27. ninakinikonān — he stops us
- 28. kikakwēcimāwāw — you<sub>pl</sub> ask him
- 29. kiwīcihitināwāw — I help you<sub>pl</sub>
  
- (b) 30. if we ask them — kakwēcimāyāhkwaW
- 31. they challenge you<sub>pl</sub> — kimawinēskomikowāwak
- 32. they help me — niwīcihikwak
- 33. you<sub>sg</sub> see them — kiwāpamāwak
- 34. I stop you<sub>pl</sub> — kinakinitināwāw

**Problem 5.**

•	$400 : \begin{matrix} \text{kampwoo} \\ \alpha_1 \times 400 : \begin{matrix} \text{kampwəhii} \alpha_1 \end{matrix} \end{matrix}$	$80 : \begin{matrix} \text{ŋkuu} \\ \alpha_2 \times 80 : \begin{matrix} \text{ŋkwuu} \alpha_2 \end{matrix} \end{matrix}$	$20 : \begin{matrix} \text{beŋjaaga} \\ \alpha_3 \times 20 : \begin{matrix} \text{be-} \alpha_3 \end{matrix} \end{matrix}$	+										
	$[10 : \text{k}\epsilon] + [5] + [\beta], 2 \leq \alpha_{1,2,3} \leq 4, 1 \leq \beta \leq 4$													
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- (a) kampwəhii shuunni na kε 810  
ŋkuu na baataanre 88
  
- (b) 15 kε na kaŋkuro  
109 ŋkuu na beŋjaaga na baaricyeere  
152 ŋkuu na beetaanre na kε na shuunni  
403 kampwoo na taanre  
1534 kampwəhii taanre na ŋkwuu sicyeere na kε na sicyeere