Twentieth International Linguistics Olympiad

Bansko (Bulgaria), 23–29 July 2023

Individual Contest Solutions

Problem 1.

	○	⟶
●⟶●	*I saw (it)*	*I see (it)*
↕●	*I was seen*	*I am being seen*

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

1. ⟶:

   - -CV → -C'V   (ş' → ts');
   - $-V_1CC'V_2- \to -V_1CV_XC'V_2-$, $V_X = (V_1 = V_2)$ | a

2. ↕● :

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

3. n' → ŋ, y' → y | C'V __

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

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

(a)

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

(b)

39.	**her'oŋ**	*I smoothed (it) out*
40.	**inişpaʔ**	*I left*
41.	**aplaʔ**	*it was opened*
42.	**şur'uy**	*it chose (it)*
43.	**pirin'**	*I saw (it)*
44.	**inşawats'a**	*I plant (it)*
45.	**k'aaniʔ**	*it was trapped*
46.	**imp'ɨhanaʔ**	*I leap*
47.	**ahɨkaʔ**	*it is being sewn, woven*
48.	**iniplaʔ**	*I was bathed*

Problem 2.

- Word order:

  - S V DO (IO) ≡ DO ^SV (IO) (S$_{(noun)}$)
    (S = subject; V = predicate (verb);
    DO = direct object; IO = indirect object [-**mokaru**])

  - $\boxed{\text{possessor}}\,\boxed{\text{possessed}}$

-

	1st person sg	2nd person sg	3rd person sg	
			(m)	(f)
possessor = subject	**n(I)-**	**p(I)-**	**(I)-**	**u-**
IO; DO (¬∃IO)	**-nu**		**-ry**	**-ru**

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

-

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 pysykary 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 hãtakurumukary** / **nuta mynaru pykanawate hãtakurumukary** }

23. *He brought your$_{sg}$ water to me.* — { **pĩpurããte ymynanu nutamukary** / **ywa mynanu pĩpurããte nutamukary** }

24. *The man drank the girl's blood.* — { **hãtakuru herẽka ãtary kyky** / **kyky ãtary hãtakuru herẽka** }

25. *I remembered the eye.* — { **ukĩtxi nhixinhikary** / **nuta xinhikary ukĩtxi** }

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
- **aɣa** 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-ɣuyanah** — *We shuddered.*

19. **ba-ihwin** — *He really cried.*

20. **nambum-kisaɣah** — *I really spat on you$_{sg}$ in vain.*

21. **bat-ɣadawn** — *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!* — **nambam-hoɣeb**

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} | + root + |

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

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 |

- $\left.\begin{array}{ll} \text{ē-} & as \dots \\ \emptyset\text{-} & if \dots \end{array}\right\}$ +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} :   -yāhkwāw
etc.

(a)   26. **ē-wāpamikoyēk** — *as he sees you$_{pl}$*

27. **ninakinikonān** — *he stops us*

28. **kikakwēcimāwāw** — *you$_{pl}$ ask him*

29. **kiwīcihitināwāw** — *I help you$_{pl}$*

(b)   30. *if we ask them* — **kakwēcimāyāhkwāwi**

31. *they challenge you$_{pl}$* — **kimawinēskomikowāwak**

32. *they help me* — **niwīcihikwak**

33. *you$_{sg}$ see them* — **kiwāpamāwak**

34. *I stop you$_{pl}$* — **kinakinitināwāw**

Problem 5.

- $\begin{bmatrix} 400: & \textbf{kampwoo} \\ \alpha_1 \times 400: & \textbf{kampwɔhii } \alpha_1 \end{bmatrix} + \begin{bmatrix} 80: & \textbf{ŋkuu} \\ \alpha_2 \times 80: & \textbf{ŋkwuu } \alpha_2 \end{bmatrix} + \begin{bmatrix} 20: & \textbf{beɲjaaga} \\ \alpha_3 \times 20: & \textbf{be-}\alpha_3 \end{bmatrix} +$
  $[10: \textbf{kɛ}] + [5] + [\beta], 2 \leq \alpha_{1,2,3} \leq 4, 1 \leq \beta \leq 4$

- $+$: **na**

1:	**niŋkin**	-niŋkin → -ni
2:	**shuunni**	
3:	**taanre**	
4:	**sicyɛɛre**	-sicyɛɛre → -ricyɛɛre
5:	**kaŋkuro**	kaŋkuro na → baa-

(a)   **kampwɔhii shuunni na kɛ**   810

     ŋkuu na baataanre   88

(b)   15   **kɛ na kaŋkuro**

    109   **ŋkuu na beɲjaaga na baaricyɛɛre**

    152   **ŋkuu na beetaanre na kɛ na shuunni**

    403   **kampwoo na taanre**

  1534   **kampwɔhii taanre na ŋkwuu sicyɛɛre na kɛ na sicyɛɛre**