First Asia Pacific Linguistics Olympiad

May 5, 2019

Solutions

Problem 1. $\boxed{\text{Rules}}$

- **kɔn** — 1, **leɓetse** — 2, **aɗe** — 3, **ts'agúsé** — 4, **túde** — 5.

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10 = **tomíní**	10 Y = **tomínékwa** Y $\quad$ (2 ≤ Y ≤ 9)
100 = **ŋamɪá kɔn**	100 Y = **ŋamɪá** Y $\qquad$ (2 ≤ Y ≤ 9)
1000 = **álifa kɔn**	1000 Y = **álifika** Y $\qquad$ (2 ≤ Y ≤ 999)

  cf. **tomíní** ($<$ Turkana *tomon*), **ŋamɪá**, **álifa** ($<$ Swahili *mia*, *elfu*)

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$$5 + \mathsf{X} = \begin{cases} \textbf{túde } \boxed{\textbf{ńda kɪɗɪ}} \textsf{ X} & (\mathsf{X} = 1) \\ \textbf{túde } \boxed{\textbf{ńda kiɗi}} \textsf{ X} & (2 \le \mathsf{X} \le 4) \end{cases}$$

$$10\,\mathsf{Z} + \mathsf{W} = \begin{cases} 10\ \mathsf{Z}\ \boxed{\textbf{ńda nébɛɛ}}\ \mathsf{W} & (1 \le \mathsf{Z} \le 9,\ \mathsf{W} = 1) \\ 10\ \mathsf{Z}\ \boxed{\textbf{ńda jɪrɪnɪ}}\ \mathsf{W} & (1 \le \mathsf{Z} \le 9,\ 2 \le \mathsf{W} \le 9) \end{cases}$$

$$100\,\mathsf{Z} + \mathsf{W} = 100\ \mathsf{Z}\ \boxed{\textbf{ńda}}\ \mathsf{W} \qquad (1 \le \mathsf{Z} \le 9,\ 10 \le \mathsf{W} \le 99)$$

$$1000\,\mathsf{Z} + \mathsf{W} = 1000\ \mathsf{Z}\ \boxed{\textbf{ńda}}\ \mathsf{W} \qquad (1 \le \mathsf{Z} \le 999,\ 100 \le \mathsf{W} \le 999)$$

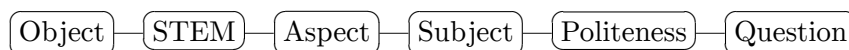- Final vowel is deleted (e.g. **ts'agúsé** → **ts'agús**).

$\boxed{\text{Answers}}$

(a) a. 256 ($= 4^4$); b. 4096 ($= 8^4$); c. 6561 ($= 9^4$); d. 10000 ($= 10^4$); e. 1296 ($= 6^4$); f. 81 ($= 3^4$); g. 16 ($= 2^4$); h. 1 ($= 1^4$); i. 2401 ($= 7^4$); j. 625 ($= 5^4$).

(b)
- k. **álifika tomíní ńda jɪrɪnɪ leɓets** — 12000
- l. **tomínékwa túde ńda kɪɗɪ kɔn** — 60
- m. **tomínékwa túde ńda nébɛɛ kɔn** — 51
- n. **álifika ŋamɪá kɔn** — 100000

(c) 3108 — **álifika aɗe ńda ŋamɪá kɔn ńda túde ńda kiɗi aɗ**

(d) 14641 — **álifika tomíní ńda jɪrɪnɪ ts'agúsé ńda ŋamɪá túde ńda kɪɗɪ kɔn ńda tomínékwa ts'agúsé ńda nébɛɛ kɔn**

Problem 2. ⟨Rules⟩

1. Sentence structure: $\boxed{(\textbf{Ta})\ (\mathsf{O})\ \mathsf{V}\ (\mathsf{S})}$ (**Ta** is used for a negative question.)

2. Verb structure:

⟨Object⟩—⟨STEM⟩—⟨Aspect⟩—⟨Subject⟩—⟨Politeness⟩—⟨Question⟩

- Object:

Stem begins with	C	V
1st person singular	**ka-**	**k-**
2nd person singular	**i-**	**dʒ-**
3rd person singular	∅-	∅-

   (C = consonant, V = vowel)

- Aspect:

$$\begin{cases} \text{-}\varnothing & \text{'...-ed ...'} \\ \text{-si} & \text{'... had finished -ing ...'} \\ \begin{cases} \text{-he} & \text{if stem ends with -a} \\ \text{-ahe} & \text{otherwise} \end{cases} & \text{'... was -ing ...'} \end{cases}$$

- Subject: 2nd person singular **-i**, 3rd person singular **-a**.
- Politeness: **-tçe**
  - Used when communicating with adults of the opposite sex.
  - Exception for males: The marker is used when speaking with son-in-laws/father-in-laws.
- Question: $\begin{cases} \text{-na} & \text{positive question} \\ \text{-ne} & \text{negative question} \end{cases}$

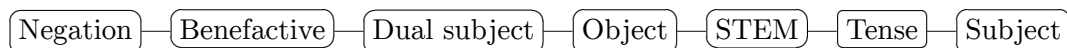3. $\mathbf{e} \to \mathbf{i}$ / __$\mathbf{a}$ (i.e. **e** is raised to **i** when followed by **a**.)

⟨Answers⟩

1. *The dark capuchin monkey told (it) to me.*

2. *Was the owl monkey meeting the woman?*

3. *Hadn't he/she finished looking for the man?*

4. All males, i.e. Manoel, Hwãa, Fwerisi, Tçūki and Fwaboro.

5. All females, i.e. Lomaj, Marja, Isabeli and Marata.

6. Tçūki, Fwaboro and Manoel.

7. **Etoe kuretiahiatçena**

8. **Dʒesenetaatçe kati**

9. **Katça ariahiatçe**

10. **Ibiana**

Problem 3. [Rules]

1. Verb structure:

[Negation]—[Benefactive]—[Dual subject]—[Object]—[STEM]—[Tense]—[Subject]

- Negation: **tee-**
- Benefactive (*'for …'*):

	singular	plural
1st person	**na-**	**niya-**
2nd person	**ka-**	**kiya-**
3rd person	**ya-**	—

- Dual subject: **aa-**
- Object:

	singular	plural
1st person	**na-**	**ne-**
2nd person	**ka-**	**ke-**
3rd person	**e-**	**e-**
reciprocal		**aka-**

- Tense:

$$\begin{cases} \textbf{-p} & \text{past } (\neq \text{today}) \\ \textbf{-g} & \text{past (today)} \end{cases}$$

- Subject:

	singular	plural
1st person	**-a**	**-e**
2nd person	**-e**	**-aa**
3rd person	**-i**	**-ai**

2. Meanings of the verbs:

	intransitive	transitive	reciprocal
mee	*come*	*bring*	—
doo	—	*see*	*meet*
bukai	—	*save*	*save each other*
dokai	—	*carry*	—
wagee	—	—	*fight*

[Answers]

(a) 13. **aameepai** — *They two came.*

14. **teekedoogi** — *He did not see you(pl) today.*

15. **naaameegaa** — *You two came for me today.*

16. **teenadokaipaa** — *You(pl) did not carry me.*

(b) 17. *You(sg) saw them today.* — **edooge**

18. *I did not come for him today.* — **teeyameega**

19. *You two saw him for us.* — **niyaaaedoopaa**

20. *They saved each other.* — **akabukaipai**

(c) 21. **kameepi** — (1) *He brought you(sg);* (2) *He came for you(sg).*

22. **edoope** — (1) *You(sg) saw him;* (2) *You(sg) saw them;* (3) *We saw him;* (4) *We saw them.*

Problem 4. ⟨Rules⟩

1. Verb roots: **g-d-l** — *grow up*; **z-k-n** — *grow old*; **kh-l** — *eat*; **h-v** — *love*; **g-n-v** — *steal*; **k(∼x)-t-v** — *write*; **b-t-l** — *shame*; **sh-m-r** — *guard*.

2.

Root	→	Simple	Intense	Causative	Reflexive
p-'-l	→	pa'al	pi'el	hif'il	hitpa'el
(C_1)-C_2-C_3	→	$(C_1)aC_2aC_3$	$(C_1)iC_2eC_3$	$hi(C_1)C_2iC_3$	$hit(C_1)aC_2eC_3$

3. Person and gender:

   - Subject = 1st person: $V_\omega \to a$; suffix **-ti**.
   - Subject = 2nd person male: $V_\omega \to a$; suffix **-ta**.
   - Subject = 2nd person female: $V_\omega \to a$; suffix **-t**.
   - Subject = 3rd person female: $V_\omega\ (\neq i) \to \partial$; suffix **-a**.

   $(V_\omega$ = final vowel$)$

⟨Answers⟩

(a)
1. *I grew up.* — **gadalti**
2. *She loved (someone).* — **ahəva**
3. *She grew up.* — **gadəla**
4. *I rewrote (something).* — **kitavti**
5. *You(masc) grew old.* — **zakanta**
6. *He stole (something) repeatedly.* — **ginev**
7. *You(fem) humiliated (someone).* — **bitalt**
8. *You(fem) corresponded (with someone).* — **hitxatavt**
9. *She wrote (something).* — **katəva**
10. *He grew (something).* — **higdil**
11. *You(masc) fed (someone).* — **hikhalta**
12. *She smuggled (something).* — **higniva**
13. *He shamed himself.* — **hitbatel**
14. *I guarded (something) firmly.* — **shimarti**

(b)
zakan — *He grew old.*
katav — *He wrote (something).*
hitshamъra — *She guarded herself.*
ganavt — *You(fem) stole (something).*

(c)
15. *I wrote (something).* — **katavti**
16. *You(masc) shamed (someone).* — **batal**
17. *She loved (someone) back.* — **hitahev**

Problem 5.

(a)

1. 𐰤𐱅   **ärän**   *men*

2. 𐰉𐰔𐰲�   **bïčdï**   *he/she cut*

3. 𐰜𐰇𐰭𐰠   **köŋül**   *heart*

4. 𐰆𐱃𐰕   **otuz**   *thirty*

5. 𐰴𐰍𐰣   **qaɣan**   *khagan*

6. 𐱅𐰃𐰔𐰠𐰃𐰏   **tizligig**   *the knee-bearer, the mighty one*

(b) 𐰢𐰏𐰠𐰇 = **ölägäm, ölägim, ölgäm, ölgüm, ölügäm, ölügüm, ülägäm, ülägim, ülgäm, ülgüm, ülügäm, ülügüm.**

(c)

1. The Old Turkic script is written from right to left.

2. "Front" and "back" consonant letters:

Adjacent vowels	**b**	**n**	**t**	**d**	**s**	**r**	**l**	**y**	**k/q**	**g/ɣ**
Front (**ä/i/ö/ü**)	𐰉	𐰤	𐱅	𐰓	𐰾	𐰼	𐰠	𐰖	𐰜 (k)	𐰏 (g)
Back (**a/ï/o/u**)	𐰆	𐰣	𐱃	𐰔	𐰽	𐰺	𐰞	𐰗	𐰴 (q)	𐰍 (ɣ)

𐰢 (**m**), 𐰕 (**z**), 𐰲 (**č**), 𐱁 (**š**) and 𐰭 (**ŋ**) do not have front/back glyph pairs.

3. Rules for writing vowels (+: written, −: not written):

Vowels	Letter	(1)	(2)	(3)	(4)
a/ä	𐰀	−	+	−	−
ï/i	𐰃	+	+	−	+
o/u	𐰆	+	+	+	−
ö/ü	𐰇	+	+	+	−

(1) first vowel in the word;
(2) word-finally;
(3) elsewhere, after **a/ä/ï/i**;
(4) elsewhere, after **o/ö/u/ü**.

4. Syllable structure (C = consonant, V = vowel):
   - first syllable: (C)V(C)
   - elsewhere: CV(C)

5. The rounded low vowels **o** and **ö** appear only in the first syllable.