

# Third Asia Pacific Linguistics Olympiad

March 28 – April 11, 2021

## Problems

- Listen carefully to the invigilators and follow their instructions.
- The contest lasts five hours. The problem set consists of eight pages and it contains five problems. You may solve the problems in any order.
- You are not allowed to use any electronic device, written or printed material or other external sources of information during the contest.
- If you have a question about any of the problems, put up your hand and ask an invigilator. The invigilator will consult with the jury before answering.
- Rules for writing out solutions
  - Do not copy the statements of the problems.
  - Write down your solution to each problem on a separate sheet or sheets.
  - Use only the front side of the answer sheet.
  - On each sheet, indicate your name, the number of the problem, and the page sequence of that sheet within the problem, e.g.:

Name	...
Problem #	5
Page #	1 / 3

Name	...
Problem #	5
Page #	2 / 3

Name	...
Problem #	5
Page #	3 / 3

(meaning first, second, and third sheet of three for the fifth problem.)

Otherwise, your work may be mislaid or misattributed.

- Unless stated differently, you should describe any patterns or rules that you identified in the data. Otherwise, your solution will not be awarded full marks.

**The contest problems must be kept confidential until they are published on the official APLO website <https://aplo.asia>. Do not disclose nor discuss the problems online until that date.**

**Problem 1 (20 points).** Here are some sentences in **language I** and their possible English translations:

1. **emanuellu mamaku canamma ηammu ηalku-nu**  
*Emanuel ate their(PL) egg for the father.*
2. **maλuηηu canaηa ηalku-naji**  
*The kangaroo eats them(PL).*
3. **mamaku papaηηu ηupalimma mariaηa ilunta-nu**  
*The father's dog killed Maria for you(DU).*
4. **ηali ηuramma pica-ηu**  
*We(DU) came for you(PL).*
5. **ηanaηa ηuramma mukuri-ηu**  
*We(PL) liked you(PL).*
6. **ηanaηa papaku ηuηcu ilunta-nu**  
*We(PL) killed the dog's mother.*
7. **ηuηcuku maλu ηalimma ciciku paka-naji**  
*The mother's kangaroo runs for our(DU) child.*
8. **ηuηcuku mama canamma mukuri-ηaji**  
*The mother's father likes them(PL).*
9. **ηuntu ηanaηamma papaku mukuri-ηaji**  
*You(SG) like our(PL) dog.*
10. **ηuntu pulamma mama ηa-ηu**  
*You(SG) saw their(DU) father.*
11. **pula mamaku maλu u-ηi**  
*They(DU) give the father's kangaroo.*
12. **naomiηa pica-ηu**  
*Naomi came.*
13. **naomilu canaηa ilunta-naji**  
*Naomi kills them(PL).*
14. **cici maλuku mukuri-ηu**  
*The child liked the kangaroo.*
15. **ciciku ηuηcuηηu ηupalija ηa-ηi**  
*The child's mother sees you(DU).*

(continued on next page)

(a) Translate into English:

16. **emanuelŋa pica-ŋi**

17. **ŋanaŋamma cici naomiku ŋammuku mukuri-ŋaŋi**

(b) Translate into English in all possible ways:

18. **pula ɲuntumma mamaku papa ɲa-ŋu**

(c) Translate into **language I**:

19. *Naomi comes for Emanuel.*

20. *You (PL) ran for us (PL).*

21. *You (SG) like us (DU).*

22. *The dog liked Emanuel.*

23. *The dog's kangaroo sees you (PL).*

24. *Maria gave your (SG) egg for the dog.*

△ **l, ŋ, ɲ** and **ɲ** are consonants. (NB: **l** ≠ **ɭ**; **n** ≠ **ŋ** ≠ **ɲ** ≠ **ɲ**.)

SG = singular (one person); DU = dual (two persons); PL = plural (more than two persons).

*Emanuel, Naomi* and *Maria* are names of people.

— *Vlad A. Neacșu*

*The remainder of this page is intentionally left blank.*

**Problem 2 (20 points).** Here are some words in **language II** and their English translations:

'k <sub>a</sub> <sup>1</sup> a <sup>5</sup> t <sub>i</sub> <sup>3</sup>	k <sub>a</sub> <sup>1</sup> <i>tree leaves</i>	't <sub>i</sub> <sup>2</sup> ʔe <sup>1</sup> a <sup>1</sup> ne <sup>1</sup>	<i>cassava garden</i>
'ku <sup>43</sup> te <sup>4</sup> e <sup>3</sup> ʒ <sub>a</sub> <sup>1</sup>	<i>your husband's sister</i>	't <sub>o</sub> <sup>1</sup> ʔt <sub>f</sub> i <sup>5</sup> ru <sup>1</sup>	<i>owl monkey's clothes</i>
'ku <sup>43</sup> ʔ <sub>a</sub> <sup>1</sup>	<i>your mouth</i>	't <sub>o</sub> <sup>1</sup> ʔ <sub>o</sub> <sup>1</sup>	<i>other one's mouth</i>
'ku <sup>43</sup> ʔu <sup>4</sup> ne <sup>1</sup>	<i>your entire body</i>	't <sub>o</sub> <sup>1</sup> ʔo <sup>5</sup> t <sub>f</sub> i <sup>1</sup>	<i>really an owl monkey</i>
na <sup>4</sup> 'me <sup>43</sup> ʔe <sup>5</sup> t <sub>f</sub> i <sup>1</sup>	<i>it is really good</i>	't <sub>f</sub> au <sup>1</sup> ʔt <sub>f</sub> i <sup>5</sup> ru <sup>1</sup>	<i>my clothes</i>
na <sup>4</sup> 'bu <sup>3</sup> ʔu <sup>1</sup> ra <sup>1</sup>	<i>it is sort of immature</i>	't <sub>f</sub> o <sup>1</sup> ʔma <sup>1</sup> ne <sup>1</sup>	<i>my wife's tree trunk</i>
'to <sup>5</sup> ne <sup>1</sup>	<i>owl monkey's tree trunk</i>	't <sub>f</sub> o <sup>1</sup> me <sup>4</sup> na <sup>2</sup> ʔā <sup>2</sup>	<i>my stick</i>
	'to <sup>1</sup> bi <sup>2</sup>		<i>other one's high-starch food</i>
	't <sub>f</sub> o <sup>1</sup> pa <sup>3</sup> ti <sup>4</sup>		<i>my fingernail</i>
	't <sub>f</sub> au <sup>1</sup> e <sup>3</sup> ʒ <sub>a</sub> <sup>1</sup> te <sup>4</sup>		<i>my sister's husband</i>
	na <sup>4</sup> 't <sub>f</sub> i <sup>1</sup> bi <sup>2</sup>		<i>its high-starch food is delicious</i>
	na <sup>4</sup> 't <sub>f</sub> o <sup>5</sup> o <sup>1</sup> ne <sup>1</sup> ʔi <sup>1</sup> ra <sup>1</sup>		<i>its garden is sort of white</i>
	'ŋo <sup>3</sup> ʔ <sub>o</sub> <sup>1</sup> a <sup>1</sup> ne <sup>1</sup>		<i>place where there are lots of ŋo<sup>3</sup> ʔ<sub>o</sub><sup>1</sup>'s</i>

(a) What is the literal translation of 'ŋo<sup>3</sup> ʔ<sub>o</sub><sup>1</sup> a<sup>1</sup> ne<sup>1</sup>'?

(b) Translate into English:

(c) Translate into **language II**:

- |   |  |
|---|--|
| 1. 'ka <sup>5</sup> ne <sup>1</sup>   | 7. <i>it is sort of delicious</i>      |
| 2. na <sup>4</sup> 't <sub>f</sub> o <sup>1</sup> o <sup>5</sup> ti <sup>3</sup>              | 8. <i>its clothes are really white</i> |
| 3. 'ŋo <sup>3</sup> ʔ <sub>o</sub> <sup>1</sup> ʔi <sup>5</sup> t <sub>f</sub> i <sup>1</sup> | 9. <i>my husband's entire body</i>     |
| 4. 'to <sup>1</sup> o <sup>1</sup> ne <sup>1</sup>  | 10. <i>my high-starch food</i>         |
| 5. 't <sub>o</sub> <sup>1</sup> ʔo <sup>4</sup> ne <sup>1</sup>                               |  |
| 6. 't <sub>f</sub> au <sup>1</sup> ne <sup>1</sup>  |  |

△ t<sub>f</sub>, ʒ, ŋ and ʔ are consonants. i is a vowel. au is a diphthong; consider it as one vowel. The mark [ˈ] indicates that the following syllable is stressed. 1, 2, 3, 4, 5 and 43 denote tones of the preceding syllable.

Pitch of the tones: low = 1 < 2 < 3 < 4 < 5 = high; 43 = 4 ↘ 3.

A tilde below a vowel (e.g. ã) denotes a creaky voice (a type of phonation that is often perceived as low-pitched and 'rough'). A tilde over a vowel (e.g. ā) denotes nasal sound.

*Owl monkey* is a kind of monkey. *Cassava* is a woody plant native to South America. k<sub>a</sub><sup>1</sup> *tree* is a kind of fruit tree. ŋo<sup>3</sup> ʔ<sub>o</sub><sup>1</sup> is a kind of fish. —Tsuyoshi Kobayashi

**Problem 3 (20 points).** Here are four different representations of a certain number:

Language III (Latin script)	toddoba iyo sagaashan
Language III (X script)	ጥኩዐዐኩሣና ዓይኩ ስናጸናዩና
X numerals	UJ
Arabic numerals	97

Below are ten arithmetic equalities written using the four types of systems shown above with some parts left blank. All the numbers that appear in the equalities are integers.

- [ 1 ] ስናዐዐጠጠ + J = 50
- [ 2 ] C × siddeed boqol = 4800
- [ 3 ] SS × ለጠሣ ዓይኩ ጥኩሣና = 555
- [ 4 ] ለጠካ + sagaal iyo sagaashan = boqol
- [ 5 ] EE × ስናናጥና = C ×
- [ 6 ] H ×  = ስናና ዓይኩ ለጠጥጥ
- [ 7 ] ስናና ሣክጅክገ ዓይኩ ዩና ዓይኩ ስዓዐዐጠጥ × ገገገ = rug
- [ 8 ] ስናጸና ×  = ሣክጅክገ + koob iyo toddobaatan
- [ 9 ] ስዓዐዐዐ ሣክጅክገ ዓይኩ ገገገና = EEU + lix boqol iyo koow
- [ 10 ] ገናሣኩ ለገገ ዓይኩ ለጠሣ ዓይኩ ገናሣና = 2021 =

(a) Fill the blanks (A–D) in X numerals.

(b) Write the equalities [1–9] in Arabic numerals.

(c) Write in language III (Latin script):

E. 401      F. COXK      G. ለገገ ዓይኩ ሣክጅክገ ዓይኩ ስኩዐዐኩ

(d) Write in language III (X script):

H. 71      I. UEOY      J. saddex iyo afartan

(!) No additional explanation besides the answers is required, nor will be marked.

**Problem 4 (20 points).** Here are some verb forms in **language IV** and their English translations:

<b>yaka</b>	<i>you (SG) give birth to it</i>	<b>ddʹaddʹaka</b>	<i>you (SG) fell</i>
<b>dʹifaxən</b>	<i>they hide it</i>	<b>kšikšaxən</b>	<i>they caught me</i>
<b>kakati</b>	<i>I help them</i>	<b>bʹabʹadžabʹabʹadža</b>	<i>they got spoiled</i>
<b>dadʹamu</b>	<i>we fall</i>	<b>dʹifachadʹifa</b>	<i>it hid you (SG)</i>
<b>katakata</b>	<i>it helped it</i>	<b>kakatamukakata</b>	<i>it helped us</i>
<b>dʹidʹifaka</b>	<i>you (SG) hide them</i>	<b>iyaxən</b>	<i>they gave birth to me</i>
<b>šana</b>	<i>they know</i>	<b>kašakuni</b>	<i>you (PL) catch them</i>
<b>chali</b>	<i>I steal it</i>	<b>yaya</b>	<i>it gives birth to them</i> <i>/ it gave birth to it</i>

(a) Translate into English:

1. **kšachakši**
2. **kakatachunikakatamu**
3. **katakataxən**
4. **bʹadža**

(b) Translate into **language IV**:

5. *it caught you (PL)*
6. *we hide it*
7. *they fell*
8. *they gave birth to them*
9. *you (SG) stole them*
10. *I knew*

△ **x** and **ch** are consonants that are pronounced using the same part of the tongue as **k**. **bʹ**, **dʹ**, **dž**, **š** and **y** are consonants. **ə** is a vowel.

SG = singular; PL = plural.

—Chih-Chun Wang

*The remainder of this page is intentionally left blank.*

**Problem 5 (20 points).** Here are some sentences in **language V** and their English translations:

1. **q'ínéysù gkòṅgkòrisà khé'éwáá**  
*A hunter(F) brought roosters.*
2. **tíméysù gkógkósà x'èésú**  
*A cook(F) skinned a hen.*
3. **múkkùmè gkógkó khé'éwáátchú**  
*A cow didn't bring hens.*
4. **gkòṅgkòrì múkkùmè'à kàású**  
*Roosters hit [=did hit] a cow.*
5. **q'ínéysò kkámbà kàáyétchógé**  
*Apparently, hunters didn't hit a bull.*
6. **tíméy q'ínéy khééyétchèégé**  
*Apparently, a cook(M) didn't bring a hunter(M).*
7. **q'ínéysò gkógkógé'à x'èésú**  
*Apparently, hunters skinned a hen.*
8. **q'ínéysò gkógkó'à kǎ'áwáá**  
*Hunters hit [=did hit] hens.*
9. **gkòṅgkòrì q'ínéyà khééyé**  
*A rooster brought a hunter(M).*
10. **tíméysù gkógkó kǎ'áwáátchúgé**  
*Apparently, a cook(F) didn't hit hens.*
11. **q'ínéy tíméysògéà kàá'ín**  
*Apparently, a hunter(M) hit [=did hit] cooks.*
12. **q'ínéysò tíméysò x'èé'íntchó**  
*Hunters didn't skin cooks.*
13. **gkòṅgkòrì q'ínéysò khéé'íntchó**  
*Roosters didn't bring hunters.*
14. **tíméy gkòṅgkòrì kǎ'áwáátchèé**  
*A cook(M) didn't hit roosters.*

Given below are some more words in **language V** and their English translations:

**nqáméy** — blacksmith(M); **bálóó** — to herd; **tégká** — leopard (of any gender).

(continued on next page)

(a) Translate into English:

15. **tíméỵ gkòṅkórìgèà x'èéỵé**
16. **nqàméysù tíméysùsà khéésú**
17. **kkámbà tégká kàásútchógé**
18. **múkkùmè q'ínéysòsà bálóó'ín**

(b) Translate into **language V**:

19. *Cooks herded hens.*
20. *Apparently, a blacksmith (F) didn't skin leopards.*
21. *A leopard (F) didn't herd a rooster.*
22. *Apparently, a bull didn't bring cooks.*
23. *Apparently, a hunter (M) brought blacksmiths.*

△ **gk, kh, kk, tch, nq, ŋ, q', x'** and **'** are consonants. The marks  $\square$ ,  $\square'$ ,  $\square\checkmark$  indicate low, high, and rising (low ↗ high) tone, respectively. A circle under a vowel (e.g. **ḡ**) indicates a devoiced vowel.

M = masculine; F = feminine. In this problem, a cow is a female cattle and a bull is a male cattle. Likewise, a hen is a female chicken and a rooster is a male chicken.

—Shen-Chang Huang

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Good luck!