

Fifteenth International Linguistics Olympiad

Dublin (Ireland), 31 July – 4 August 2017

Individual Contest Solutions

Problem 1. The number system is duodecimal.

- **gwīnìṅ** — 1, **bà** — 2, **tàt** — 3, **nààs** — 4, **tùṅūn** — 5, **tīmìn** — 6, **tāāmà** — 7, **rwīt** — 8
- **ḡāā- α** = $12 - \alpha$ ($1 \leq \alpha \leq 3$): **ḡāātàt** — 9, **ḡāābà** — 10, **ḡāāgwīnìṅ** — 11
- **kūrū** — 12
- **bā-kūrū bī- γ** = $\gamma \cdot 12$ ($2 \leq \gamma \leq 8$), **bā-kūrū ḡāā-bī- γ** = $(12 - \gamma) \cdot 12$ ($1 \leq \gamma \leq 3$)
(the tone in the first syllable of γ becomes middle)
- β **ná** $\left\{ \begin{array}{l} \text{gwē gwīnìṅ} \ (\delta = 1) \\ \text{vè} \ \delta \ (2 \leq \delta \leq 11) \end{array} \right\} = \beta + \delta$ ($\beta = k \cdot 12$)

Answers:

- (a)
1. $5^2 + 3 + 4 = 32$
 2. $3^4 = 81$
 3. $7^2 + 9 + 1 = 59$
 4. $9^1 = 9$
 5. $8^2 + 2 + 5 = 71$
 6. $2^5 = 32$
 7. $9^2 + 4 + 3 = 88$
 8. $4^3 = 64$
 9. $16 + 21 = 18 + 2 + 17$
- (b) **bākūrū bītāt** — 36, **ḡāāgwīnìṅ** — 11, **kūrū** — 12.
- A. $108 - 3 - 13 = 92$
- B. $49 - 14 - 15 = 20$
- (c) 6 — **tīmìn**, 22 — **kūrū ná vè ḡāābà**, 97 — **bākūrū bīrwīt ná gwē gwīnìṅ**, 120 — **bākūrū ḡāābībā**.

Problem 2. Word order: <possessor> <possessed>.

Possessive prefixes:

possessor		possessed
1st person sg	n-	a- body part e- otherwise
2nd person sg	∅-	
3rd person sg	h-	
‘... of each of us’	t-	
‘one’s own ...’	d-	
2nd person pl	ri-	

Answers:

- (a)
- | | |
|-----------------------------|--|
| 1. a-bang | e. <i>your (sg.) shoulder</i> |
| 2. a-táng he-ya | p. <i>your (sg.) thumb</i> [‘your (sg.) hand’s mother’] |
| 3. bataa ha-wata | o. <i>upper part of a tree</i> [‘tree’s neck’] |
| 4. de-kafi | d. <i>one’s own rope</i> |
| 5. e-bataa ha-táng | b. <i>your (sg.) branch</i> [‘your (sg.) tree’s hand’] |
| 6. e-kuda ha-wata | i. <i>your (sg.) horse’s neck</i> |
| 7. falepak ha-wei | j. <i>trigger</i> [‘pistol’s ear’] |
| 8. ha-táng ha-min | a. <i>his fingertip</i> [‘his hand’s nose’] |
| 9. he-lui | m. <i>his knife</i> |
| 10. maama he-falepak | h. <i>father’s pistol</i> |
| 11. na-pong | c. <i>my face</i> |
| 12. ri-èng | k. <i>your (pl.) eyes</i> |
| 13. ri-tama | q. <i>your (pl.) sea</i> |
| 14. ri-ya ha-táng | f. <i>your (pl.) mother’s hand</i> |
| 15. tama ha-bang | n. <i>seashore</i> [‘sea’s shoulder’] |
| 16. ta-min | l. <i>our noses</i> (the nose of each of us) |
| 17. te-fe ha-wei | g. <i>our pigs’ ears</i>
(the ear of the pig of each of us) |
- (b) 1. **a-min** — *your (sg.) nose*; 2. **de-ya he-bataa** — *one’s own mother’s tree*
- (c)
1. *pig* — **fe**
 2. *your (pl.) knife* — **ri-lui**
 3. *your (sg.) mother’s father* — **e-ya he-maama**
 4. *my father’s face* — **ne-maama ha-pong**
 5. *one’s own ear* — **da-wei**
 6. *my sea* — **ne-tama**

Problem 3. Rules:

- word order:

– S V (O) (L) (S = subject, V = predicate, O = object, L = place)

ng- (S = 1st person sg)

– X V L \equiv L V X

– N P (N = noun, P = possessive pronoun);

- \frown : gender and number concord —

singular	plural
mú-	à-
dì-	má-
	zì-
mù+ (place)	

(before a vowel i- > j-, u- > w-, a- > ∅);

- \smile : the tone of the last syllable assimilates to the tone of the first syllable of the following word;
- the tone of the last syllable of the last word is low in a declarative sentence and high in an interrogative one.

Answers:

- (a) 12. **múlózí mwámónà zìtéténbwá**
Did the sorcerer see the stars?
13. **zìtéténbwá zjálà mùdjúlù**
There are stars in the sky. = (4)
14. **ngákínà**
I danced.
15. **djálá djámónà màhónzò mùlwándá**
Did the man see the bananas in Luanda?
- (b) 16. *Did I sing?*
ngáfíká
17. *The person met the sorcerer and the friend in the square.*
mútú mwásángá múlózi nì òkámà mùkítándà
18. *My man (husband) saw the cave.*
djálá djámí djámónà òkúngù
19. *There are sorcerers in Luanda.*
mùlwándà mwálà àlózì; àlózì álà mùlwándà

Problem 4. Word order: [[<class>] <species>] [<numeral> <class>].

The direction of writing is from left to right. One syllable = two characters:

C(C)-	-V(V)(C)
ခ b, ဃ bl, ခ c, ဟ hn, က k, က kr, ဟ l, ပ p, ပ pl, ပ pr, တ t, တ tr	ခ a:, ခ a:k, ခ aj, ခ at, ခ aw, ခ ɔ:r, ခ ɛ:, ခ ie, ခ iet, ခ iət, ခ ɔ:, ခ uan, ခ uat, ခ ʌh

Answers:

3	→ တ ခ ခ ခ ←	taw bɛ:	to see the raft
6	→ ပ ခ ပ ခ ပ ခ ←	→plaj priət pɛ: plaj←	three bananas
7	ဟ ခ တ ခ	→ hna: traw to: ←	six rhinoceros
8	ပ ခ ဟ	→ puan lah ←	four hands of bananas
9	ပ ခ ခ	→ pɛ: la: ←	→ three leaves ←
10	→ ပ ခ ပ ခ ခ ←	cie pʌh la:	seven sheets of paper
11	ဟ ခ ပ	→ la: plo: ←	aubergine/eggplant leaf
12		→plaj plo: bɔ:r plaj←	two aubergines/eggplants
15		la: priət traw la:	→ six banana leaves ←
16	→ က ခ က ခ ←	kɔ:r bɔ:r to:	two doves
19	ခ ခ က	bɔ:r ka:	→ two fish ←
20	ပ ခ ပ	→ puan pla: ←	four blades

Problem 5.

1. number: l- $\left\{ \begin{array}{l} \text{V-} \left\{ \begin{array}{l} \dots\dots\dots \text{ singular} \\ \left\{ \begin{array}{l} \text{vut-} \text{ people} \\ \text{ven-} \text{ otherwise} \end{array} \right\} \text{ plural} \\ \text{xan-} \dots\dots\dots \text{ 'many'} \end{array} \right. \\ \text{u-} \dots\dots\dots \text{ dual} \end{array} \right.$
(V = the vowel in the following syllable);

2. **pat-** ‘big’;

3. **bung-** ‘group’, **kon-** ‘part’.

Rules:

- before another prefix **le-ven-** > **len-**
- before **p** -n > m
- before **k** -n > ng
- between two vowels -p, p- > v
- between two vowels -t, t- > r
- between two vowels -k, k- > x.

Answers:

(a) **lavatbungmenemen** — *big group of villages*

- (b)
1. **laradi** — *man*
 2. **lavatkonuna** — *big branch*
 3. **laxantoonan** — *many spirits*
 4. **levengkatli** — *eyes*
 5. **loxot** — *place*
 6. **lubungkavus** — *group of white men*
 7. **luvaroos** — *two big vines*

- (c)
8. *heart* — **leveve**
 9. *gardens* — **leventaamang**
 10. *many things* — **laxampanga**
 11. *grandchildren* — **luvuttubuno**
 12. *two parts of day* — **luxonaleng**
 13. *branches* — **lengkonuna**
 14. *big branches* — **lempatkonuna**