

OzCLO

Australian Computational and Linguistics
Olympiad

Round One 2024

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OzCLO

Welcome to the Australian Computational and Linguistics Olympiad!
To be completely fair to all participants across Australia, we need you to read, understand and follow these rules.

RULES

The contest is **two hours** long.

You may not discuss the problems with anyone except your team members and the facilitator.

It's up to each team to decide how you want to solve the problems. You may decide to divide up the problems among your team members, or work on each problem together.

There are **five** problems. Each problem is worth a specified number of points, with a total of 100 points in the contest.

For ONLINE teams:

Complete the **Team Information Questionnaire**.

Submit your answers online at the end of the session. (If, however, you are not able to submit them for some reason or you forget to do so, they will nevertheless be saved and graded.)

Please do not take screenshots or photos of the problems. Just like in offline competitions, you're not allowed to 'keep' the problems after the two hours are up.

For OFFLINE teams:

Write your team registration number on **each page** of your Answer Booklet.

Only your **Answer Booklet** will be graded. All your final answers should be in the spaces provided in the Answer Booklet.

You may use your individual contest booklets for working out your answers, but these will **not** be graded. (Make sure you allow enough time to transfer your final answers to the Answer Booklet. You must do this before the two hours are up.)

At the end of the session, leave all booklets on your table to be collected by the facilitator. Do not take papers out of the room.

Each problem has been thoroughly checked for clarity, accuracy and solvability. Some are more difficult than others, but all can be solved using ordinary reasoning and analytic skills. You don't need to know anything about linguistics or about these languages to solve the problems. If we have done our job well, almost no one will solve all these problems completely in the time allotted--so don't be discouraged if you don't finish everything.

Enjoy!

<1> Wash Them For Me¹ (1/2)

Below are some phrases from the Yurakaré language of Bolivia, with the English translations given *in random order*.

1. matëptë	(a) I pierce it.
2. worojwoy	(b) I throw them away.
3. tibobom	(c) She digs it.
4. majokkoy	(d) She takes us.
5. tamala	(e) She washes them.
6. timalam	(f) You hit me.
7. bobom	(g) You hit it.
8. ëwwë	(h) You take me.

Task 1. Determine the correct correspondences.

1	2	3	4	5	6	7	8

Task 2. Below are another eight phrases from the language, featuring some new elements. Again, the translations are in random order. Determine the correct correspondences; the knowledge you gained from the first set of sentences will help!

9. tutëptë	(a) I dance with them.
10. mubaylay	(b) I send it to you.
11. kadanda	(c) She builds it for me.
12. tindula	(d) You pierce it for him.
13. tindum	(e) She washes (it) with us.
14. mimbachey	(f) She sends it to him.
15. kambache	(g) You fry it for me.
16. kanworojwom	(h) She ascends with him.

9	10	11	12	13	14	15	16

¹ Created by Michael Salter (OzCLO).

<1> Wash Them For Me (2/2)

Task 3. Here is another Yurakaré sentence, with its English translation:

tanworojwo tapojore *She pierces our canoe for us.*

Give English translations for the following three sentences: they contain three Yurakaré word-elements that you haven't seen before, which mean (not necessarily in this order) "clothes", "field" and "house".

17. tinëwwëm tijukkula _____

18. mandulay masibë _____

19. mutëptë miropa _____

Task 4. Study these sentences with the Yurakaré verb *kukku*.

tinkukkum	I like you
minkukku	You like him
mankukkuy	They like me

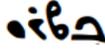
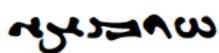
Translate "You like me" into Yurakaré? _____

<2> The Golden Road to Samarkand² (1/2)

The ancient kingdom of Sogdiana, centred on the city Samarkand, was a major trading centre on the “Silk Road” that linked China with the Middle East and Europe beyond. As a result of this, the Sogdian language became an important lingua franca (common language) in the region, and a good deal of writing in Sogdian survives. One of the main scripts used to write Sogdian was the “Manichean” script, which was derived from ancient Aramaic.

Below are some words in the Manichean Sogdian script, with their English transliterations. NOTE: the Manichean Sogdian script was not always “precise”, in that sometimes the same symbol was used to indicate two different sounds, and sometimes the same sound could be represented by two different symbols.

A macron mark (¯) over a vowel indicates a long vowel (one that is longer than the unmarked equivalent); ə indicates the unstressed “schwa” vowel (as in unstressed syllables of English words such as “device” or “alone”). š indicates the “sh” sound in “shin”, ž is its voiced counterpart (the “zh” sound in “Asia”). č indicates the “ch” sound in “child”. θ indicates the “th” sound in English “thin”, and δ is its voiced counterpart (the “th” sound in “this”). γ indicates a guttural sound a little like a French “r”.

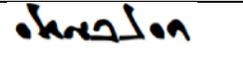
Transliteration	Manichean Script
<i>yāxēt</i>	
<i>pətəri</i>	
<i>δēwət</i>	
<i>šukča</i>	
<i>nōšč</i>	
<i>martīt</i>	
<i>wītərənd</i>	
<i>əstəkānjəl</i>	
<i>šəwēm-kān</i>	
<i>suyδīkt</i>	
<i>anyōn</i>	

² Created by Michael Salter (OzCLO).

<2> The Golden Road to Samarkand (2/2)

Task 1. Match the Manichean script and English versions of these Sogdian words by selecting the English version (a), (b) or (c) for each of the Manichean script words i), ii), iii).

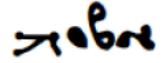
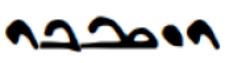
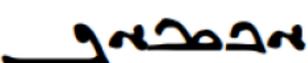
(a) wēōpātī, (b) neγōšākt, (c) ešya.

i)		
ii)		
iii)		

Task 2. Below are three more Sogdian words in English transliteration, followed by nine words in the Manichean Sogdian script. *Three* of these nine words match the three English transliterations. Which ones?

Answer by writing the Roman numeral associated with the corresponding word in Manichean Sogdian script to the right of the English transliteration.

(d)	āžōnd	
(e)	kambōnī	
(f)	kanθi	

i.  iv.  vii. 
 ii.  v.  viii. 
 iii.  vi.  ix. 

Task 3. Here are two English words written in Manichean script. Write the words in standard English orthography.

	Manichean script	standard English spelling
(g)		
(h)		

Task 4. The 'dot' or 'blob'  represents more than one sound. What are they? Answer using the 'transliteration' script.

<3> Happy Birthday!³ (1/1)

The Ewe language is spoken principally in Ghana, Togo, and Benin. Names in Ewe are often connected to the day on which a person was born. (Not all Ewe names are related to date of birth, but all the names used in this problem are). Below are some 2024 dates along with one possible name for a child born on each date:

January 7	Kɔsi (male child)
January 9	Kɔbla (male child)
January 11	Yawa (female child)
January 14	Kwasi (male child)
January 15	Kɔdzo (male child)
January 20	Ami (female child)
January 24	Aku (female child)
January 27	Kwami (male child)
February 6	Abla (female child)
February 11	Akosua (female child)
February 13	Kwamla (male child)
February 22	Yao (male child)
February 26	Adzoa (female child)

“ɔ” is a vowel sound rather like 'aw' in 'paw' or 'law' as pronounced in many American English varieties.

HINT: Can you recall on what day New Year's Day fell this year?

Task 1. Match each date below to a name listed below that could be given to a child born on that day this year:

(a) January 10	(i) Afua
(b) January 13	(ii) Kɔku
(c) January 16	(iii) Yao
(d) January 26	(iv) Adzoa
(e) January 29	(v) Kɔmi
(f) February 8	(vi) Abla

a	b	c	d	e	f

Task 2. On which day could a child named Kofi have been born?

January 12, 2024		January 18, 2024		January 23, 2024	
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Task 3. Which of these names might be given to a child born on February 5, 2024?

Kwadzo		Afi		Kwaku	
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Task 4. In Ewe, the word *gbe* means “day”. Translate each of these Ewe words into English:

Dzodagbe _____ Fidaybe _____

³ Created by Michael Salter (OzCLO) and further edited by Tom McCoy & Victoria Li with the NACLO program committee.

<4> Flight into Egypt⁴ (1/2)

Coptic is the ancestral language of the Copts and the last descendant of Ancient Egyptian. It was used as a spoken language until the 18th century, but now is only used as the liturgical language of the Coptic Orthodox Church. In Coptic Christianity, God is male; the earliest Coptic writings, however, date to before Christianisation. Coptic is written in a script derived from Greek, which has been transliterated here. ē and ō are vowels.

Here are some phrases in Coptic along with their English translations:

COPTIC	ENGLISH TRANSLATION
maab nrompe	<i>thirty years</i>
nenute nte wrōme	<i>the gods of a man</i>
wremao nte tpolis	<i>a rich man of the city</i>
pefbal snaw	<i>his two eyes</i>
pexow nte whap	<i>the day of a judgment</i>
pēi mpefnute	<i>the house of his god</i>
pma mpjahjh nnobhe	<i>the place of gnashing of teeth</i>
pran mpanute	<i>the name of my god</i>
ptime snaw	<i>two villages</i>
tmaaw mpaiōte	<i>the mother of my father</i>
tefrompe	<i>his year</i>
teshime mpatime	<i>the woman of my village</i>
tiw noik	<i>five loaves of bread</i>
tobhe nte wremao	<i>the tooth of a rich man</i>
trompe mpnojnej	<i>the year of mockery</i>
wobhe nte tefmaaw	<i>one of his mother's teeth</i>
whōb nte pnute	<i>a thing of God</i>
wran	<i>a name</i>

Task 1. Translate the following Coptic phrases into English:

1.	pjahjh nefobhe	
2.	nma mpanojnej nnremao	
3.	wbal nte prōme	

⁴ Created by Brendan Bethlehem.

<4> Flight into Egypt⁵ (2/2)

Task 2. Translate the following English phrases into Coptic:

4.	<i>a loaf of bread</i>	
5.	<i>five of my villages</i>	
6.	<i>my mockery of his father's name</i>	
7.	<i>two teeth</i>	
8.	<i>the judgments of my mother</i>	
9.	<i>a woman of his village</i>	

Task 3. If you were looking up words in a Coptic dictionary, what form of the words with meanings corresponding to the following English words?

	COPTIC WORD	MEANING
10.		city
11.		God
12.		house
13.		place
14.		tooth
15.		year

⁵ Created by Brendan Bethlehem.

<5> Evidentially, my dear Tariana⁶ (1/3)

Tariana is an endangered language spoken in the Vaupés river area in Brazil, close to the border with Columbia. There are about 100 Tariana speakers left, while there are a further 1,500 Tariana people, who no longer speak the language.

One morning, Antônia, Cândido, Margarida, João, Maria, and Emílio were playing a detective game, in which they had to discover who just “poisoned” their sleeping friend Ismael! They very quickly decided that he had drunk poisoned *manioc-flour*, a mixture of cassava (or tapioca) flour and water. When asked why, their responses were as follows:

SPEAKER	TARIANA STATEMENT	ENGLISH TRANSLATION	EVIDENCE FOR CLAIM
Antônia	Diha kahwi-nuku diiraka	<i>He drank manioc-flour</i>	She saw him drink it before he fell asleep
Cândido	Mayē kahwi-nuku diiranihka	<i>Ismael drank manioc-flour</i>	He saw some manioc-flour on his upper lip (like a “milk moustache”)
Margarida	Diha kahwi-nuku diiramahka	<i>He drank manioc-flour</i>	She had heard him slurping his manioc-flour in the room next door
João	Mayē kahwi-nuku diirasika	<i>Ismael drank manioc-flour</i>	He knew that he took some of his sister’s manioc-flour every morning
Maria	Diha kahwi-nuku diirapidaka	<i>He drank manioc-flour</i>	Ismael told her (before falling asleep) that he had drunk some
Emílio	Mayē kahwi-nuku diiramahka	<i>Ismael drank manioc-flour</i>	He could smell manioc-flour on Ismael’s breath

First, they suspected José, so went to his house. They investigated the house, and spoke to a key witness (José’s mum). They all concluded José was innocent – he had an alibi! When asked why, their responses were as follows:

SPEAKER	TARIANA STATEMENT	ENGLISH TRANSLATION	EVIDENCE FOR CLAIM
Antônia	Juse irida dimanikaka	<i>José was playing football</i>	She saw him playing football on the field over the road
Cândido	Juse irida dimanikanihka	<i>José was playing football</i>	He saw that both José and his football kit were missing
Margarida	Juse irida dimanikasika	<i>José was playing football</i>	She knew it was time for his weekly football match
João	Naha irida namanikaka	<i>They were playing football</i>	He could see José playing football with his brother
Maria	Naha irida namanikapidaka	<i>They were playing football</i>	She was told by José’s mum that he was playing football with his brother
Emílio	Naha irida namanikanihka	<i>They were playing football</i>	He saw that José’s football and both sets of football boots were missing

⁶ Created by Babette Newsome (NACLO) and revised by Simi Hellsten (UKLO).

<5> Evidentially, my dear Tariana (2/3)

Next, they went to Ismael's house. Again, they looked around, and spoke to a second key witness (Ismael's sister, Olívia). They agreed she was acting very suspiciously, as she wouldn't say what she was doing at the time of Ismael's "death". This time, they didn't all agree. When asked what they thought had happened, their responses were as follows:

Task 1. Fill in the gaps (a) and (b) by giving Cândido's and Maria's statements in Tariana.

Speaker	Tariana Statement	English Translation	Evidence for Claim
Antônia	Óli dukwasika	<i>Olívia was sleeping in the hammock</i>	She believed that Olívia always sleeps all morning
Cândido	(a)	<i>She was swimming</i>	He saw that her clothes were wet
Margarida	Duha duayhamahka	<i>She was swimming</i>	She had heard her in the river earlier
João	Óli kahwi-nuku dunimahka	<i>Olívia was making manioc-flour</i>	He could smell manioc-flour in the kitchen
Maria	(b)	<i>She was making manioc-flour</i>	She was told by Ismael's dad that Olívia had been making manioc-flour
Emílio	Duha hinipuku dumeyutanihka	<i>She was raking the garden</i>	He saw that the garden had recently been raked

When João and Maria shared their information, they told Olívia:

“Piha mayē piinunihka!” *You killed Ismael!*

They began explaining all of the things they had come across that morning. They establish that Olívia had also gone swimming, and that Leonardo had raked the garden before lying down in the hammock.

Task 2. For each statement below, three possible pieces of evidence are given. Select which one the speaker may have used. Answer by selecting the appropriate letter (out of a, b, c) in the rightmost column of the table.

<5> Evidentially, my dear Tariana (3/3)

SPEAKER	TARIANA STATEMENT	ENGLISH TRANSLATION	EVIDENCE FOR CLAIM
Leonardo	Óli duayhaka	<i>Olivia was swimming</i>	a. He knew that she liked swimming b. He had seen Olivia swimming in the river. c. He saw that her clothes were wet
Maria	Leó hinipuku dimeyutasika	<i>Leonardo was raking the garden.</i>	a. She knew that Leonardo raked the garden every morning b. Leonardo smelt of the garden c. She saw that someone had raked the garden
João	Diha hinipuku dimeyutamahka	<i>He was raking the garden.</i>	a. Leonardo smelt of the garden b. He had heard Leonardo raking the garden c. He saw that someone had raked the garden
Emílio	Leó diha dikwanihka	<i>Leonardo was sleeping in the hammock.</i>	a. Leonardo told him that he had been asleep b. He saw that someone had been sleeping in the hammock c. Leonardo was well-rested

Task 3. Fill in the gaps (d)-(h) with the correct Tariana translation.

SPEAKER	TARIANA STATEMENT	ENGLISH TRANSLATION	EVIDENCE FOR CLAIM
Cândido	(d)	<i>You were swimming.</i>	He had overheard Olivia confirm that she had gone swimming.
Margarida	(e)	<i>He was raking the garden.</i>	She saw that Leonardo's clothes had bits of grass and leaves on them.
Olivia	(f)	<i>Leonardo was sleeping in the hammock.</i>	She knew that Leonardo always lies down in the hammock after gardening.
Antônia	(g)	<i>You were drinking manioc-flour.</i>	She saw a dirty cup next to the hammock where Leonardo had been sleeping.
Olivia	(h)	<i>They were playing football.</i>	She had heard a football game going on while she was swimming