



United Kingdom Linguistics Olympiad 2025

Round 1 Paper - Every Level

Welcome to UKLO, the examination of wondrous languages. Every year we give out a new challenge to students to test their language and problem-solving skills. Can you figure out how these languages work?

There are 10 languages to analyse in total:

- Q1: **Devanagari** – *Babette Verhoeven*
- Q2: **Fur** – *Joakim Colpier*
- Q3: **Saisyat** – *Babette Verhoeven*
- Q4: **Icelandic** – *Michael Salter*
- Q5: **Armenian** – *Michael Salter*
- Q6: **Colours** – *Simi Hellsten & Andrew Lamont*
- Q7: **Proto-Basque** – *Arul Kolla*
- Q8: **SENĆOTEN** – *Eimear McKnight*
- Q9: **Cherokee** – *Ethan Chi & Simi Hellsten*
- Q10: **Egyptian** – *Evan Hochstein*

Instructions:

Please make sure you have the following materials:

- 1x Cover Sheet (this sheet); 1x Examination Paper (Questions 1 – 3);
- 1x Answer Sheet (2 pages);
- 2-3 blank sheets for rough working.

Once the examination is over, **return all sheets to your teacher**, including any sheets with your answers on. You are not permitted to remove any materials from your classroom.

Please **write your full name** on the top of every page of the Answer Sheet. If you make a mistake, put a line through your whole answer (e.g. ~~wrong answer~~).

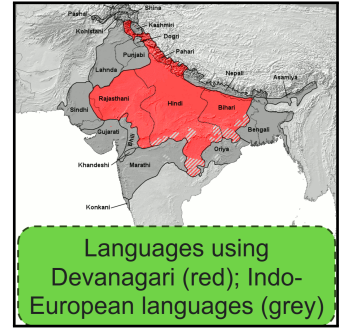
If you need more blank paper for working, it must be provided. If you need to write some of your answers on blank paper instead of the provided Answer Sheet, indicate this **clearly** on the Answer Sheet and on the sheet with your answers on.

We hope you enjoy exploring the fascinating world of language. Remember that if you don't immediately see a way into a problem, it's because you're looking in the wrong place. Keep looking at it from different angles, and you'll get there.

Test Development Committee 2025: Julia Barron, Brendan Bethlehem, Toby Collins, Alison Craig-Greene, Lexie Graham, David Hellsten, Simi Hellsten (Chair), fr. Rudolf Loewenstein, Eimear McKnight, Vlad A. Neacșu (Technical Editor), Benedict Randall-Shaw, Daniel Titmas, Daniel Tu-raev, Babette Verhoeven.

Problem 1. Devanagari (5 marks)

Cricket is probably the most popular sport in India, and many people follow the Indian Premier League, the main cricket league. Here are the 10 teams' names written in the Devanagari script used to write Hindi, one of the official languages of India. It may be helpful to know that there are no capital letters in Devanagari.



1. गुजरात तैतन्स्
2. लखनऊ सुपेर् गअिन्त्स्
3. सुन्रैसेर्स् हैदराबाद
4. मुंबई इन्दयिन्स्
5. राजस्थान रोयल्स्
6. दलिली चपतिल्स्
7. चेन्नई सुपेर् कनिग्स्
8. पंजाब कनिग्स्
9. कोलकाता क्नैत् रैदेर्स्
10. रोयल् छल्लेन्गेर्स् बैंगलोर

Q 1.1 Match the Hindi team name to the correct English version. In the square brackets, you can see the actual Hindi pronunciations of several words and cities; the Devanagari spelling of words reflects the Hindi pronunciation, not the English spelling!

- | | |
|---|--|
| a. Lucknow [Lakhanoo] Super Giants | f. Rajasthan [Raajasthaan] Royals |
| b. Chennai [Chenni] Super Kings | g. Gujarat Titans [Taitans] |
| c. Punjab [Panjaab] Kings | h. Mumbai [Mumbi] Indians [Indiyans] |
| d. Kolkata [Kolakaataa] Knight [Knait] Riders [Raiders] | i. Sunrisers Hyderabad [Haidaraabaad] |
| e. Delhi [Dilli] Capitals | j. Royal Challengers Bangalore [Baingalor] |

Problem 1. Devanagari Answers

For **Q1.1** write the corresponding letter under each item.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
g	a	i	h	f	e	b	c	d	j

Maximum 10 pts.

Q 1.1 Max 10. 1 pt per correct correspondence.

Problem 1. Devanagari Commentary

Devanagari is an abugida: a script where letters represent consonants with an ‘inbuilt’ vowel, standard the short *-a-*. For writing a consonant that is followed by another vowel, you add an accent or additional symbol to indicate *-i-* or *-u-* for example.

References & Further Reading

- <https://www.omniglot.com/writing/devanagari.htm>

Problem 2. Fur (5 marks)

Fur is the language of the Fur people of Darfur, in western Sudan, and has nearly 800,000 native speakers.

Below are some sentences in Fur, along with their English translations. Note that the diacritics ´ and ` mark high and low tone respectively; ñ marks the same sound as in Spanish, similar to the *n* in *onion*. You always indicates the singular pronoun.



- | | |
|-------------------------|------------------------------------|
| 1. Kòrò jabèl. | <i>You drink the water.</i> |
| 2. Yáà tòn tuumèl. | <i>The woman builds the house.</i> |
| 3. Bàin kòrò lemèl. | <i>The elder licks the water.</i> |
| 4. Tònà jutumèl. | <i>You build the houses.</i> |
| 5. Kàrabà kòrò kelmèlà. | <i>The animals lick the water.</i> |
| 6. Tòn yáà bauèl. | <i>The house holds the woman.</i> |
| 7. Bàinà tòn kutumèlà. | <i>The elders build the house.</i> |
| 8. Yáà dèl baèl. | <i>The woman drinks the oil.</i> |
| 9. Jirgèl. | <i>You tie.</i> |

You are also told that the verb **ruñèl** means *to lift*.

Q 2.1 Translate into English:

10. Yáà bàin ruñèl.
11. Kòrò jelmèl.
12. Yáà rigèl.

Q 2.2 Translate into Fur:

13. *The animal ties.*
14. *The elders lift the house.*
15. *You hold the woman.*
16. *The animal licks the oil.*

Problem 2. Fur Answers

2.2	10. <i>The woman lifts the elder.</i>
	11. <i>You lick the water.</i>
	12. <i>The woman ties.</i>
2.2	13. Kàrab + rigèl.
	14. Bàinà tòn + kurñèlà.
	15. Yáà + jabuèl.
	16. Kàrab dèl + kelmèl.

Maximum 11 pts.

Q 2.1 Max 3. 1 pt for a correct translation. Allow English misspellings, as long as it is clear what is intended.

Q 2.2 Max 8. 1 pt per correct component separated by +, in the correct order. If at least part is correct but not in the correct order, award 1 pt. E.g. both **Jabuèl yáà** and **Yáà kab** score 1 pt for 15. Allow up to one extra/missing diacritic per sentence, but penalise a second. Ignore punctuation and capital letters.

Problem 2. Fur Commentary

- Word order is Subject – Object – Verb.
- Plural is marked with **-à**, both on nouns and verbs with plural subjects. (Students could believe that the suffix is **-a**, and that the final tone of any noun is low, hence the leniency in marking diacritics.)
- Verbs with 2sg or 3pl subjects receive the prefixes **j-** and **k-** respectively, and the first two sounds of the root swap places (metathesise).

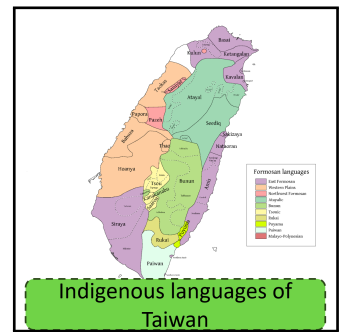
References

- Jakobi, A. (1990). *A Fur grammar: phonology, morphophonology and morphology* (N.A.). Hamburg: Buske.

Problem 3. Saisiyat (10 marks)

Saisiyat is an indigenous language spoken by the Saisiyat people in the mountainous regions of North-West Taiwan. It is spoken by just under 6,000 people. It is considered endangered as few young people use it, but in recent years with help from the Taiwanese government, there is an effort to save Saisiyat as an indigenous language.

Below are some Saisiyat sentences with possible English translations. Note that in some instances, some context about the situation affects the grammar of the Saisiyat sentence, but not the English translation. This context is given to you in [square brackets]. The two symbols ‘ and ’ represent a particular pronunciation of the vowel after or before it.



Tatini’ tomalek ka ‘aewpir.	<i>The old man cooks some sweet potato.</i>
Sia komaat ka kinaat no korkoring.	<i>He writes the child a letter.</i>
Yaba’ somatel ka kakaat no korkoring.	<i>The father sends the child a pen.</i>
Sia mobay ka kakaat ka korkoring.	<i>He gives the child a pen.</i> [It is his own child]
Yaba’ saeoe ka talor ka korkoring.	<i>The father offers the child some aubergine.</i> [It is the father’s own child]
Sia mobay ka ‘aehoe’ ka korkoring.	<i>She gives the child a dog.</i> [She physically handed them the dog]
Tatini’ mobay ka ‘aewpir no ‘aehoe’.	<i>The old man gives the dog some sweet potato.</i> [The old man doesn’t like the dog]
Sia mobay ka kakaat hisia.	<i>She gives him a pen.</i> [She is his sister]
‘Oya’ pasibaeah ka kakaat ‘inisia.	<i>The mother lends him a pen.</i> [He is far away]

Q 3.1 Translate the following sentences into Saisiyat, taking the context into account if it is given.

- The child writes mother a letter.*
- The father gives him some aubergine.*
[The father is angry with him]
- She gives him some sweet potato.*
[She is not angry with him]
- The child offers the old man some sweet potato.*
[The old man is away in hospital, and the child sends some sweet potato into hospital for him]

[This problem continues on the next page.]

Here are some more Saisiyat words:

rayhil	=	<i>money</i>	amilika	=	<i>foreigner</i>
kaibaaen	=	<i>clothes</i>	ayam	=	<i>pork</i>
'aehael	=	<i>sibling, brother or sister</i>			

Q 3.2 Translate the following into English. If the Saisiyat sentence conveys extra context, suggest one option of what it might be.

5. **Yaba' mobay ka rayhil 'inisia.**
6. **'Oya' pasibaeaeh ka kaibaaen no korkoring.**
7. **'Oya' pasibaeaeh ka kaibaaen ka korkoring.**

Q 3.3 Translate the following into Saisiyat, taking the context into account:

8. *The old man gives the father the money.*
[The old man does not really want to give the father any money]
9. *The mother offers the money to the child.*
[The mother is happy to give her child money]
10. *The child offers sweet potato to the sibling.*
[It is the child's own sibling]
11. *He offers pork to the foreigner.*
[He does not know the foreigner]

Problem 3. Saisiyat Answers

3.1	1. Korkoring komaat + ka kinaat + no ‘oya’.
	2. Yaba’ mobay + ka talor + ‘inisia.
	3. Sia mobay + ka ‘aewpir + hisia.
	4. Korkoring saeoe + ka ‘aewpir + no tatini’.
3.2	5. <i>The father gives money to him.</i> [e.g. He is far away, the father doesn’t like him]
	6. <i>The mother lends the child (the/some) clothes.</i> [e.g. not her child, she is angry with the child, the child is far away]
	7. <i>The mother lends the child (the/some) clothes.</i> [e.g. it is her child, the child is close by]
3.3	8. Tatini’ mobay + ka rayhil + no yaba’.
	9. ‘Oya’ saeoe + ka rayhil + ka korkoring.
	10. Korkoring saeoe + ka ‘aewpir + ka ‘aehael.
	11. Sia saeoe + ka ayam + no amilika.

Maximum 33 pts.

Q 3.1 Max 12. 1 pt per component separated by a +, in the correct order. Do not distinguish between ‘ and ’. Allow minor misspellings, e.g. **komat** for **komaat**. Do not require capital letters.

Q 3.2 Max 9. 3 pt if correct translation and a valid context. Award 1 pt if either just the translation is correct, or the context is valid.

A context is valid for 5 and 6 if it conveys a sense of distance, either physical or emotional. It is valid for 7 if it conveys a sense of closeness, either physical or emotional.

Q 3.3 Max 12. 1 pt per component separated by a + in the correct order. Do not distinguish between ‘ and ’. Allow minor misspellings, e.g. **tatini** for **tatini’**. Do not require capital letters.

Problem 3. Saisiyat Commentary

- Word order: Agent - Verb - (**ka**) Direct Object - (**ka/no**) Indirect Object
- **ka sia** > **hisia**, **no sia** > **'inisia**
- **no** is used to indicate either physical or emotional distance between the agent and the indirect object; **ka** is used otherwise.

In Saisiyat, case is marked with prefixes. In this case, the accusative case is marked with **ka** before the noun, as in **ka korkoring** and the dative case with **no**, as in **no korkoring**.

When a verb is ditransitive, such as the English verb *give*, it takes two nouns or noun phrases as objects: we tend to refer to these as direct object and indirect object.

For example:

Ali gives the child a book – here *the child* is the receiver (indirect object) and *a book* is the thing being given (direct object). In many languages, such as Saisiyat, these different roles can be indicated with different cases: the accusative case for direct objects (marked with **ka** in Saisiyat) and the dative case for indirect objects (marked with **no** in Saisiyat).

Unlike English, which has only a few ditransitive verbs, Saisiyat has more verbs that can be used in a ditransitive construction with two nouns / noun phrases, such as *offer* (**saeoe**).

There is also a twist in Saisiyat when it comes to using dative case for indirect objects, as you can also use the accusative case for indirect objects in situations where the indirect object is close either physically or emotionally. As in the example sentence: **Sia mobay ka kakaat ka korkoring** (*He gives the child a pen*), where **ka** is used for both **kakaat** (*pen*) and **korkoring** (*child*). Here, the child is close by, so **ka** is used.

But where there is a distance (either physical or emotional), the **no** (dative) prefix is used:

- **Sia komaat ka kinaat no korkoring.** – *He writes the child a letter* – pragmatically, you write letters to people who are not in the same place, so the dative **no** is used.
- **Yaba' mobay ka talor no korkoring.** – *Father gives the child an eggplant*, as in sentence 3, where father is angry with the child suggesting an emotional distance between him and the child, so that the dative **no** is used.
- Similarly, you would use the **ka** accusative prefix with sibling, but the **no** prefix with *foreigner* as in sentences 11 and 12, because normally there is a sense of closeness between siblings (they are family), which is missing from the situation with a foreigner.

The problem has kept the Saisiyat grammar deliberately simple as the use of case forms is also affected by the focus of the verb, which has been ignored here.

References

- Hsieh, F. & Huang, S. (2006). *The Pragmatics of Case Marking in Saisiyat*. *Oceanic Linguistics*, 45(1), 91-109.
- Tsai, P. S. (2003). *The Structure of Spatial Expressions in Saisiyat*. *Language, Information and Computation: Proceedings of the 17th Pacific Asia Conference*, 1-3 October, 2003, Sentosa, Singapore (pp. 339-350). Waseda University.

Problem 4. Icelandic (10 marks)

Unlike many of the world's languages, Icelandic has not simply copied English terms for modern technology. Icelanders are proud of the rich history of their language, and have opted instead to coin authentic Icelandic words for various 21st century necessities. Nevertheless, since Icelandic, like English, is a Germanic language, some parts of the words below will look familiar (and have familiar meanings).

Here are fourteen Icelandic technological terms, followed by their English translations in a random order.



- | | |
|----------------------------|----------------------------|
| 1. farartæki | a. <i>cable (electric)</i> |
| 2. farsími | b. <i>computer</i> |
| 3. fartölva | c. <i>computer cable</i> |
| 4. kvikmynd | d. <i>electric light</i> |
| 5. myndsímtal | e. <i>electricity</i> |
| 6. rafmagn | f. <i>email message</i> |
| 7. rafmagnsljós | g. <i>laptop</i> |
| 8. rafmagnssnúru | h. <i>mobile phone</i> |
| 9. símanúmer | i. <i>film, movie</i> |
| 10. símahleðslutæki | j. <i>phone call</i> |
| 11. símtal | k. <i>phone charger</i> |
| 12. tölva | l. <i>phone number</i> |
| 13. tölvupóstur | m. <i>vehicle</i> |
| 14. tölvusnúru | n. <i>video call</i> |

Q 4.1 Determine the correct correspondences.

Q 4.2 Give the Icelandic words for:

15. *image*

16. *speech*

Q 4.3 Give an English expression for:

17. **símisnúru**

18. **tölvuljós**

Q 4.4 The adjective *mobile* in English can have two similar, but slightly different meanings. Give the Icelandic word-part that corresponds to each of the following meanings:

19. *portable, can be moved*

20. *moving*

Problem 4. Icelandic Answers

For Q4.1 write the corresponding letter under each item.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
m	h	g	i	n	e	d	a	l	k	j	b	f	c

4.2	15. mynd	16. tal
4.3	17. phone cable	18. computer light, screen
4.4	19. far	20. kvik

Maximum 26 pts.

Q 4.1 Max 14. 1 pt each.

Q 4.2 Max 4. 2 pts each. No partial marks.

Q 4.3 Max 4. 2 pts each. No partial marks, but allow any reasonable translation of the literal phrases *phone-string* and *computer-light*. Allow *phone charger* for 17.

Q 4.4 Max 4. 2 pts each. No partial marks.

Problem 4. Icelandic Commentary

The key to this problem is breaking down the words into their component parts. Note that for Q5.4, that distinction between **far** and **kvik** is only true in compounds; as standalone words, **fara** is a verb meaning *to go*, and **kvika** means *to move*.

farar-tæki	=	going-device = vehicle
far-sími	=	mobile-phone
far-tölva	=	mobile-computer = laptop
kvik-mynd	=	moving-picture = film, movie
mynd-sím-tal	=	picture-phone-talk = video call
rafmagn	=	electricity (lit. amber-power)
rafmagns-ljós	=	electric-light = electric light
rafmagns-snúru	=	electric-string = cable (electric)
síma-númer	=	phone-number
síma-hleðslu-tæki	=	phone-charge-device
sím-tal	=	phone-talk = phone call
tölva	=	computer
tölvu-póstur	=	computer-post = email message
tölvu-snúru	=	computer-string = computer cable

Problem 5. Armenian (15 marks)

Armenian, the official language of Armenia, is part of the Indo-European language family, the language family that contains most European languages like English and Russian, as well as many South Asian languages like Punjabi and Hindi. Its alphabet, developed in the early 5th century CE, is also related to the Latin alphabet we use for English, since both descend from an archaic form of the Greek alphabet.

Below are the names of several of the world's countries in the Armenian script, and their English equivalents in a random order. Note that some of the names of countries are slightly different in the Armenian language.



- | | |
|---------------|--------------|
| 1. Ֆրանսիա | a. Canada |
| 2. Գերմանիա | b. Australia |
| 3. Կանադա | c. Israel |
| 4. Իտալիա | d. America |
| 5. Իսրայել | e. Peru |
| 6. Բուլղարիա | f. Russia |
| 7. Արգենտինա | g. England |
| 8. Ավստրալիա | h. Bulgaria |
| 9. Ֆինլանդիա | i. Libya |
| 10. Ռուսաստան | j. France |
| 11. Անգլիա | k. Germany |
| 12. Պերու | l. Finland |
| 13. Ամերիկա | m. Romania |
| 14. Լիբիա | n. Italy |
| 15. Ռումինիա | o. Argentina |

Q 5.1 Determine the correct correspondences.

Q 5.2 Write (in the Latin alphabet) how you think the Armenian names for *England* and *Russia* are pronounced.

Q 5.3 Write the names of the following countries in the Armenian script:

- | | | | |
|----------|--------------|--------------|-------------|
| 16. Iran | 17. Pakistan | 18. Cameroon | 19. Burundi |
|----------|--------------|--------------|-------------|

The names of all of these are pronounced the same in Armenian as in English.

Problem 5. Armenian Answers

For Q5.1 write the corresponding letter under each item.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
j	k	a	n	c	h	o	b	l	f	g	e	d	i	m

5.2	<i>England</i> = Anglia	<i>Russia</i> = Rusastan or Rosastan
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5.3	16. Իրան	18. Կամերուն
	17. Պակիստան	19. Բուրունդի

Maximum 27 pts.

Q 5.1 Max 15. 1 pt per correct correspondence.**Q 5.2** Max 4. 2 pt each. Allow 1 pt for a reasonable attempt, with at most 2 incorrect letters. Do not require capital letters.**Q 5.3** Max 8. 2 pt each. 1 pt with one or two letters wrong. Be generous - the letters do not have to look exactly like the print forms, so long as it is clear which Armenian letter was intended. Note that **nl** counts as a single Armenian letter.**Problem 5. Armenian Commentary**

Armenian uses an alphabet (really two, as there are some differences between the Eastern and Western alphabets) very similar to the Latin alphabet, although adjusted to suit the Armenian language better. The main difficulty in this problem is seeing through the small differences in country names in Armenian and English, as in Q4.2, which makes the problem more than just matching letters. Although the difference between uppercase and lowercase letters is usually mostly size, such as Պ / q which makes the *g* sound in *Germany*, some have more difference, such as Ա / ա A / a.

References and further reading:

- <https://www.omniglot.com/writing/armenian.htm>

Problem 6. Colours (15 marks)

Languages and their speakers have many ways of describing colours – sometimes by comparing to well-known materials (*copper hair*, *mustard wallpaper*); sometimes using very specific terms (*crimson ribbon*); and sometimes using very broad terms (*grey-blue sky*). English has 11 “basic colour terms”: *white*, *grey*, *black*, *red*, *orange*, *yellow*, *green*, *blue*, *purple*, *pink*, and *brown*. However, other languages can have as few as 2 or as many as 12.

Below is a table with 8 objects, and the basic colour term that native speakers of fifteen different languages might use to describe them. Note that colour vision is not necessary to solve this problem.

	<i>ripe plum</i>	<i>ripe strawberry</i>	<i>ripe banana</i>	<i>fresh grass</i>	<i>clear sky</i>	<i>deep ocean</i>	<i>adult crow</i>	<i>fresh snow</i>
Bassa	hui	ziza	ziza	hui	hui	hui	hui	ziza
Bété	kp	zeli	zeli	kp	kp	kp	kp	fee
Ejagham	ebi	ebi	ebi	enyaga	enyaga	enyaga	enyaga	ebare
Karajá	iso	iso	tyre	tyre	tyre	tyre	ilyby	ura
Matsés	piu	piu	piu	umu	umu	umu	chëshe	ushu
Apinaye	grãgrã	kamrêk	ràràr	grãgrã	grãgrã	grãgrã	tyk	aka
Tsafiki	luban	luban	laqueban	losimban	fiban	paban	paban	fiban
Seri	kʔe'el	kʔe'el	kwassool	ko'il	ko'il	ko'il	k'ooppool	ko'oxp
Guambiano	piguig	piguig	uscuig	chilga	pillig	pillig	yalig	polig
Teribe	dindin	sresren	shoylor	keson	dindin	dindin	sisi	pluplun
Tlapanec	minuu	mana	mojmo	maxa	maxa	minuu	skuni	mixa
English	purple	red	yellow	green	blue	blue	black	white
Yakan	taluk	peat	binaning	gaddung	bilu	bilu	ittem	pole
Amuzgo	tsjan'chi	wee	cajan	cachuii'	tsa	tsjo'	ntom	canchii'
Hebrew	sagol	adom	tsahov	yarok	t'khelet	kakhol	shakhor	lavan

In 1969, the anthropologist Brent Berlin and linguist Paul Kay proposed a set of rules about basic colour terms. Five of them are given below in a simplified form, with the objects *ripe plum* - *fresh snow* replaced with the letters (A) - (H).

1. Every language has at least two basic colour terms, which distinguish between (A) and (B).
2. If it has at least three, it uses different words for each of (A), (B) and (C). If it has only three, the same word is used for both (B) and (D).
3. If it has at least five, it distinguishes between (B) and (D), and also has a unique word for (E).
4. If it has at least six, it distinguishes (D) from (F).
5. A language only has a unique word for (G) if it has one for (H). Before then, (G) will share a word with at least one of (A), (D) or (F).

Although these rules are no longer believed to be completely true, they do still describe most languages accurately. In particular, they do describe all fifteen languages above.

[This problem continues on the next page.]

Q 6.1 Determine which object each of the letters (A) – (H) refers to.

Hint: your answers shouldn't feel especially counterintuitive – languages with fewer basic colour terms will distinguish colours that are more different, and not distinguish colours that are more similar.

Q 6.2 Below is a similar table for eight other languages. For each language, indicate whether or not the basic colour words given follow rules 1-5.

	<i>ripe plum</i>	<i>ripe strawberry</i>	<i>ripe banana</i>	<i>fresh grass</i>	<i>clear sky</i>	<i>deep ocean</i>	<i>adult crow</i>	<i>fresh snow</i>
Abidji	wāwanakoko	lebe	wāwanakoko	fwae	fwae	gale	lobu	lofu
Ese Ejja	huo'o	huo'o	jahua	tahua	pohui	tahua	tehui	oshi
Kwerba	nokonum	nokonum	kainanesenum	icem	asiram	icem	icem	asiram
Lele	wile	wile	bore	bore	bore	induwa	induwa	bole
Ocaina	tsipi	tsiho	boora	moxooso	moxooso	moxooso	jutohfu	furaana
Waorani	opa'tawae	opa'tawae	na'amae'ta	we'nedae	we'nedae	we'nedae	wintamo	na'amae'ta
Yucuna	ipirani	querani	jehuani	ipureni	ipureni	ipureni	cameni	jareni
Zapotec	nu-bizat	nu-na'	nu-cach	nu-ca'	nu-ca'	nu-asul	nu-cas	nu-cacy

Q 6.3 Below is another similar table, but with one word in each row replaced with a letter (a)-(c).

	<i>ripe plum</i>	<i>ripe strawberry</i>	<i>ripe banana</i>	<i>fresh grass</i>	<i>clear sky</i>	<i>deep ocean</i>	<i>adult crow</i>	<i>fresh snow</i>
Nafaanra	nye	nye	___(a)___	wə	wə	wə	wə	finge
Tucano	sōa'ro	sōa'ro	ewuro	___(b)___	ya'saro	ya'saro	ñiro	butiro
Kalam	likañ	___(c)___	walin	minj-kimemb	muk	muk	mosimb	tund

For each of (a)-(c), give all possible words from the same row that the language might use to refer to that object, while still following rules 1-5.

Language information

Abidji, Bassa, and Bété are Kru languages, spoken by around 85,000, 600,000 and 50 speakers respectively in West Africa. Amuzgo, Tlapanec, and Zapotec are clusters of Otomanguean languages spoken in Mexico by around 60,000, 150,000 and 500,000 people respectively. Apinaye and Karajá are Macro-Je languages spoken in central Brazil by around 2,000 – 3,000 people each. Ejagham and Nafaanra are Atlantic-Congo languages, spoken by around 120,000 people in Nigeria and Cameroon, and 90,000 people, mostly in Ghana. Ese Ejja is a Tacanan language spoken by around 700 speakers in Peru and Bolivia. Guambiano and Tsafiki are Barbacoan languages, spoken by around 20,000 and 2,000 in the Colombian and Ecuadorian Andes. Hebrew and Lele are Afro-Asiatic languages, with around 5 million native speakers, primarily in Israel, and around 26,000 speakers in Chad. Kalam is a Trans-New-Guinea language, spoken by around 15,000 people in Papua New Guinea. Kwerba is spoken by around 2,500 people in five villages in West Papua. Matsés is a Panoan language spoken by around 2,000 people on the Peru-Brazil border. Ocaina is a Huitotoan language, spoken by around 50 people along the Peru-Colombia border. Seri is a linguistic isolate spoken by 700 – 1000 people in Mexico. Teribe is a Chibchan language spoken by around 3,000 people in Panama and Costa Rica. Tucano is a Tucanoan language, spoken by around 12,000 people along the Vaupés river in Brazil and Colombia. Waorani is a linguistic isolate spoken by around 2,000 speakers in Ecuador. There are possibly more speakers living in uncontacted groups in Peru. Yakan is an Austronesian language, spoken by around 100,000 people in the Philippines. Yucuna is an Arawakan language, spoken by nearly 2,000 people along the Miritiparaná river in Colombia.

Problem 6. Colours Answers

6.1	A. <i>fresh snow</i>	E. <i>ripe banana</i>
	B. <i>adult crow</i>	F. <i>deep ocean</i>
	C. <i>ripe strawberry</i>	G. <i>clear sky</i>
	D. <i>fresh grass</i>	H. <i>ripe plum</i>

For **Q6.2** tick the boxes corresponding to languages that follow the rules.

Abidji ☐	Ese Ejja ☐	Kwerba ☒	Lele ☒	Ocaina ☐	Waorani ☒	Yucuna ☐	Zapotec ☒
------------------------------------	--------------------------------------	---	---	------------------------------------	--	------------------------------------	--

6.3	a. <i>nye, wə, finge</i>	b. <i>ya'saro, butiro, sōa'ro</i>	c. <i>likañ, muk, minj-kimemb</i>
-----	--------------------------	-----------------------------------	-----------------------------------

Maximum 15 pts.

Q 6.1 Max 8. 1 pt each. Allow minor miscopying, e.g. *snow* for *fresh snow*, and misspellings, as long as it is clear what is intended.

Allow the English names of colours: *white, black, red, green, yellow, dark blue, light blue, purple*. Do not allow *blue*. Allow numbers 1-8 corresponding to the columns (i.e. 1 = *ripe plum*, 8 = *fresh snow*).⁷

Q 6.2 Max 4. Award 4 pts if completely correct. Award 3 pts if 7/8 boxes are correctly ticked or left blank. Award 2 pts if 6/8 boxes are correctly ticked or left blank. Award 1 pt if 5/8 boxes are correctly ticked or left blank. Award no points if 4 or fewer boxes are correct.

More succinctly: after four correct boxes, begin awarding 1 pt for a correct box.

Accept any indication of “correct” and “incorrect”, e.g. writing Yes/No, or crossing out languages that do not follow the rules, instead of leaving them blank.

Q 6.3 Max 3. 1 pt each if correct. No partial marks. Allow answers in any order.

Allow for minor misspellings, as long as it is clear what is intended.

Problem 6. Colours Commentary

Berlin & Kay’s original rules could be more accurately summarised as follows.

1. Every language distinguishes between “warm” red/yellow/white and “cool” green/blue/black.
2. Next, a language will split “warm” into white and red/yellow.*
3. Next, red/yellow splits into two words, referring to red and yellow, and green/blue/black splits into two words (either green and blue/black or green/blue and black.) These can happen in either order.

4. Next, the language evolves a unique word for blue, separate to both green and black.
5. Finally, the language evolves a word for brown, then purple, pink, grey, and orange in some order. Further distinctions, like light vs dark blue, come later.

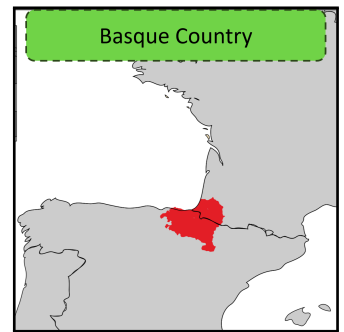
These rules, in particular the last one, have come under a lot of scrutiny, although they seem to describe most languages.

*Note that Karajá and Lele treat most yellows as a shade of green/blue, but are otherwise regular.

References and further reading: The data is taken from The World Color Survey (P. Kay, 2010).

Problem 7. Proto-Basque (20 marks)

Most languages spoken in Europe today are Indo-European, brought to Europe by waves of migration some time 3000 to 8000 years ago. This includes English, French, and German, as well as Russian, Greek, and Armenian. Before this, various other languages were spoken, such as the language of Minoan Crete, famous for its undeciphered writing system known as Linear A. Of these old European languages, only Basque survives, being spoken by around 800,000 people in northern Spain and southern France.



In the same way that French and Spanish descend from Latin, modern-day Basque descends from an older language called Proto-Basque. Although there are no speakers of Proto-Basque left, linguists can use historical methods to attempt to reconstruct what words in Proto-Basque may have looked like. For example, here is one proposal from the Proto-Basque numbers 1-9, given in a random order. Note that since these words are reconstructed, rather than known for certain, they are preceded by *.

- | | | |
|--------------------------------------|--------------------------|--------------------------------------|
| a. *berr-eri | d. *berr-eri-ahur | g. *eri-ahur |
| b. *be-oro-atz | e. *atz-az-eri | h. *atz-az-bada-eri-ahur-itzi |
| c. *atz-az-berr-eri-ahur-itzi | f. *bada-eri | i. *atz-az-berr-eri |

Each of these proposed Proto-Basque numbers are made of smaller meaningful word-parts. For example, ***berr-eri** literally means *another finger*.

Below are some of the word-parts of the Proto-Basque numbers, with their English translations given in a random order. Note that the meanings of ***be** and ***itzi** are not relevant (linguists have other reasons to believe that they were present).

- | | |
|-----------------|-------------------------------|
| 1. *ahur | j. <i>another</i> |
| 2. *atz | k. <i>finger</i> |
| 3. *az | l. <i>hand</i> |
| 4. *bada | m. <i>(in) palm (of hand)</i> |
| 5. *berr | n. <i>there is</i> |
| 6. *eri | o. <i>with</i> |
| 7. *oro | p. <i>whole</i> |

Q 7.1 Determine which of the numbers a-i above correspond to each of the numbers 1-9.

Q 7.2 Determine the correspondences between words 1-7 and j-p.

Below are the modern Basque numbers 5-10 in a northern dialect, given again in a random order.

- | | | |
|---------------------|-----------------|------------------|
| q. zazpi | s. bortz | u. zortzi |
| r. bederatzi | t. hamar | v. sei |

Q 7.3 Determine which of the modern Basque numbers q-v above correspond to each of the numbers 5-10. It may be helpful to know that Basque **z** is very similar to **s** (although pronounced with the tongue touching the teeth).

Problem 7. Proto-Basque Answers

For **Q7.1** write the corresponding letter (from a to i) under each item.

1	2	3	4	5	6	7	8	9
f	a	d	g	b	e	i	c	h

For **Q7.2** write the corresponding letter (from j to p) under each item.

1. *ahur	2. *atz	3. *az	4. *bada	5. *berr	6. *eri	7. *oro
m	l	o	n	j	k	p

For **Q7.3** write the corresponding letter (from q to v) under each item.

5	6	7	8	9	10
s	v	q	u	r	t

Maximum 19 pts.

If the word(s) referred to by the letter has been written (e.g. *another* instead of j) mark it as correct.

Q 7.1 Max 9. 1 pt each.

Q 7.2 Max 7. 1 pt each.

Q 7.3 Max 3. 3 pts for all 6 correct; 2 pts for 4 or 5 correct; 1 pt for 2 or 3 correct.

In other words, 0.5 pts per tick, then round down to a whole number.

Problem 7. Proto-Basque Commentary

These Proto-Basque reconstructions are still not widely accepted, but are one recent proposal. The numbers 1-9 have the following literal translations:

1. *there is a finger*
2. *another finger*
3. *another finger in the palm*
4. *finger in the palm*
5. (?) *whole hand*
6. *hand with finger*
7. *hand with another finger*
8. *hand with 2 (left) in the palm*
9. *hand with 1 (left) in the palm*

To derive the modern forms, make the following observations:

- Two end in **-tzi**, and two end in ***itzi**. Of these, ***bada** probably corresponds with **bede**, giving 8 and 9.
- ***be-oro-atz** > **bortz** is very plausible.
- Of the following, both **sei** and **zazpi** end in **i**, and contain **s~z**. This makes more sense to correspond to 6 and 7. Of these, the **p** likely comes from the **b** in ***berr**, so we get 6 and 7. Note that **sei** may also be a Romance borrowing.

- **Hamar** looks nothing like any of the Proto-Basque 5-9, so must be 10.

References and further reading:

- Gomez-Acedo, F. and Gomez-Acedo, E., 2019. *Reconstruction of the Ancient Numeral System in Basque Language*. *Philology*, 4(2018-2019), pp.157-172.

Problem 8. SENĆOTEN (20 marks)

SENĆOTEN (**sənčáθən**, also known as Saanich) is a dialect of North Straits Salish, and the native language of the WSÁNEĆ people. As of 2014 it had six native speakers on the Saanich Peninsula of Vancouver Island, Canada. Its distinctive all-caps alphabet was developed in 1978 by Dave Elliott, a member of the Saanich community, and is used extensively in writing, teaching and revitalisation efforts. In this problem, a different phonetic alphabet, developed by linguists, is used specifically because it is easier for linguistic analysis.



The inventory of possible sounds found in SENĆOTEN is very different to that of English. Its inventory of *resonants* (consonants made with no disturbance of the airflow as it passes through the mouth) is similar: **/m n ŋ l y w/** (note that **ŋ** is the same sound as the *n* in *finger*). However, its inventory of *obstruents* (consonants made with some disturbance of the airflow in the mouth) is significantly larger: **/p t č k kʷ q qʷ ʔ θ s ʃ š xʷ ɣ ɣʷ h/**. For example, **ʃ** is similar to Welsh *ll*, pronounced like a simultaneous *h* and *l* with no vibration of the vocal folds. **ɣ** is pronounced like the sequence **th**, and produced with a strong ‘popping’ sound. Knowledge of how individual SENĆOTEN resonants or obstruents are pronounced is not necessary for solving this problem.

An apostrophe above a consonant (as in **m'**) indicates that it is glottalised, that is, pronounced along with closure of the vocal folds. **ə** is like the first vowel in *about*. The mark ' above a vowel indicates stress.

In the table below are some verbs in SENĆOTEN in two grammatical forms, ‘non-actual’ (*X-ed*) and ‘actual’ (*be X-ing*). For example, **sɣət** could be translated as *I pushed it*, while **čátəŋ'** could be translated as *I am crawling*. Some forms are missing.

non-actual	actual	meaning	non-actual	actual	meaning
sɣət	səɣt	<i>push it</i>	čtəŋ	čátəŋ'	<i>crawl</i>
ɣ'pəɣ	ɣ'əpɣ	<i>scatter</i>	ʃələt	ʃəlt	<i>splash it</i>
ʃám'tət	ʃəm't	<i>hit it</i>	kʷel	____(a)____	<i>hide</i>
kʷsəŋ	kʷəsəŋ'	<i>count</i>	____(b)____	ʔəʃkʷ	<i>pinch</i>
q'pət	q'əpt	<i>collect it</i>	q'wáləŋ	____(c)____	<i>cook</i>
qew	qéqəw'	<i>rest</i>	____(d)____	xəʃəŋ'	____(e)____
kʷsət	kʷəst	<i>count it</i>	____(f)____	ʔəʃtəkʷ	<i>startle</i>
mələč	məfč	<i>roll over</i>	____(g)____	____(h)____	<i>collect</i>
ɣ'iw'	ɣ'íɣəw'	<i>run away</i>	čənət	____(i)____	<i>bury it</i>
kʷəl'tət	kʷəlt	<i>pour it out</i>	štəŋ	____(j)____	<i>walk</i>
xəʃət	xəʃt	<i>hurt it</i>	____(k)____	____(l)____	<i>cook it</i>
ʃap'	ʃáʃəp'	<i>eat</i>	____(m)____	təqʷt	<i>tighten it</i>

Q 8.1 Fill in cells (a)-(m). For one answer you should be unsure between two options; give either option.

Problem 8. SENĆOTEN Answers

8.1	a. k^wék^wəl'	h. q'ópəŋ'
	b. t^hək^w	i. čən't
	c. q^wəl'əŋ' or q^wələŋ'	j. šátəŋ'
	d. xətəŋ	k. q^wələt
	e. <i>hurt</i>	l. q^wəl't
	f. t^hək^w	m. tq^wət
	g. q'pəŋ	

Maximum 38 pts.

Q 8.1 Max 38. For all except e: award 3 pts if completely correct; 2 pts if there is one missing/extra diacritic; 1 pt with one extra/missing/incorrect letter. A diacritic here is an apostrophe over a consonant (e.g. **q'**), an accent on a vowel (e.g. **á**), a raised consonant (e.g. **q^w**, **t^h**), or other similar mark (e.g. **x**, **č**). A letter here is a single character including all diacritics. E.g. **t^ht^hək^w** and **t^hek^w** both score 1 pt as an answer to f with one letter wrong; **t^hək^w** and **t^hək^w** both score 2 pts. Two letters in the incorrect order counts as two incorrect letters, e.g. **q'əpəŋ** scores 0 pts for g.

For e, award 2 pt if correct. Do not allow e.g. *hurt it*, *hurts*.

Pay close attention to diacritics (**á** vs **a**; **č** vs **ć**; **l** vs **ł** vs **t**; etc). In particular, glottalisation marks (apostrophes on consonants) are important, and may be either missing or hard to see in students' handwritings.

Do not penalise full letters for superscripts, e.g. **t^h** for **t^h**.

For each of a-m except c, if more than one word is given, award 0 pts. For c, if more than one word is given, award points for the highest scoring word. E.g. **q^wəl'əŋ'** / **q^wələŋ'** scores 2 pts.

Problem 8. SENĆOTEN Commentary

- The data show two methods by which the actual is formed from the non-actual. SENĆOTEN verbs can form the actual through many other strategies, but these are two common and fairly regular ones.
- Some verb stems form pairs ending in **-t** and **-ŋ**. **-t** denotes transitive verbs (translated here as *X it*), while **-ŋ** denotes intransitive ‘middle’ verbs (implying an action relating to or benefiting oneself; translated here as just a bare verb).
- Each non-actual verb stem has an underlying structure of CVC or CCəC (C = consonant, V = vowel). The actual is derived as follows:

Shape of non-actual	Shape of actual
C ₁ V ₁ C ₂	C ₁ V ₁ C ₁ əC ₂
C ₁ C ₂ əC ₃	C ₁ əC ₂ C ₃

- Additionally, all non-glottalised resonants (**m n ŋ l w**) which are not the first consonant in the word become glottalised in the actual form. Another rule which is also consistent with the given data is that only the last non-initial resonant in the vowel becomes glottalised, which is why **q’w’ələŋ** is also accepted for (c).
- In all verb forms, **CR** > **CəR** (R = resonant).
- In two-syllable verb forms, place stress on the first vowel.

References and further reading:

- Montler, T. R. *An outline of the morphology and phonology of Saanich, North Straits Salish*. University of Montana Occasional Papers in Linguistics No. 4.; 1986.
- Montler, T. R. *Infixation, reduplication and metathesis in the Saanich actual aspect*. Southwest Journal of Linguistics, 9, 92–107; 1989.

Problem 9. Cherokee (25 marks)

Cherokee (natively written ᏍᏏᏉᏯ) is an Iroquoian language, and the native language of the Cherokee people. It is considered endangered, as only around 2,000 of the 450,000 Cherokee citizens are fluent in it, with most of them being over 50. The Cherokee originally lived in what is now the south-eastern United States, but were forcibly displaced between 1830-1850, and now the majority live in Oklahoma. This has led to some differences between the version of Cherokee spoken in the east and the version in Oklahoma – this problem is based on the Oklahoma dialect.



Below are some Cherokee verbs with a possible English translation. Although Cherokee is typically written in the native Cherokee syllabary, here, the words have been written in a simplified transcription. Note that $v \approx a$ in *about*. EXP indicates that the speaker in some way experienced the event, for example they saw it occur. NXP indicates that they did not experience the event, for example they were not present or it has not actually occurred. Cherokee distinguishes both length and tone on vowels, which interact in intricate ways with verbs – for simplicity, it has not been marked here. *They* is used here as a gender-neutral singular pronoun.

hitolikaju	<i>you_{SG} are forgiving them, right?</i>
yvskiskahljv	<i>if you_{SG} bit_{EXP} me again</i>
yikvtolije	<i>if I forgave_{NXP} you_{SG}</i>
vjvyohlkaju	<i>I am recognising you_{PL} again, right?</i>
skiskahljes	<i>did you_{SG} bite_{NXP} me?</i>
hitolijv	<i>you_{SG} forgave_{EXP} them</i>
thla yvhiyohljv	<i>you_{SG} did not recognise_{EXP} them again</i>
kvsahljes	<i>did I bite_{NXP} you_{SG}?</i>
thla yvjitolikas	<i>am I not forgiving them again?</i>
jiskahlje	<i>I bit_{NXP} them</i>
thla yiskitolika	<i>you_{SG} are not forgiving me</i>

Q 9.1 Translate the following into English:

1. **yjvskahlje**
2. **thla yjvyohljvs**
3. **vhitolikaju**
4. **thla yvkvyohlka**
5. **yihitolije**

Q 9.2 Translate into Cherokee:

6. *did you_{SG} forgive_{NXP} them?*
7. *if I recognised_{NXP} them again*
8. *I forgave_{EXP} you_{PL} again, right?*
9. *am I not biting you_{SG} again?*
10. *if you_{SG} are biting me*

Problem 9. Cherokee Answers

9.1	1. <i>if I bite_{NXP} you_{PL}</i>	4. <i>I am not recognising you_{SG} again</i>
	2. <i>did I not recognise_{EXP} you_{PL}?</i>	5. <i>if you_{SG} forgave_{NXP} them</i>
	3. <i>you_{SG} are forgiving them again, right?</i>	
9.2	6. hi+toli+jes [4]	9. thla y+v+kv+skahl+kas [6]
	7. y+v+ji+yohl+je [6]	10. yi+ski+skahl+ka [5]
	8. v+jv+toli+jvju [5]	

Maximum 46 pts.

Q 9.1 Max 20. For each: award 4 pts if correct; 3 pts with one mistake; 2 pt with two mistakes; 1 pt with three mistakes. Allow e.g. (brackets) instead of subscripts. Ignore any punctuation – in particular, do not allow only a question mark as indicating a question. A mistake is any of the following:

- Missing/extra *if*, question, negative, *right?*, *again*. There may be multiple of these mistakes. E.g. for 1, *if I did not bite_{NXP} you_{PL}* is a single mistake (extra negative), while *did I not bite_{NXP} you_{PL}* is three (missing *if*, extra question, extra negative). Note that *right?* is a single item, e.g. for 1, both *did I bite_{NXP} you_{PL}?* and *I bite_{NXP} you_{PL}, right?* are both two mistakes (missing *if*, extra item).
- Incorrect/missing tense. Treat missing/extra EXP/NXP as incorrect tense, although do not penalise EXP/NXP placed on the wrong verb, e.g. *did_{EXP} I not recognise you_{PL}* for 2 is correct. *you_{SG} are forgiving* or *you_{SG} forgave* instead of *you_{SG} forgave_{NXP}* are both a single mistake.

Allow simple present instead of present continuous, e.g. *I do not recognise* instead of *I am not recognising*, or *you_{SG} forgive* instead of *you_{SG} are forgiving*. Do not allow e.g. *I am not recognising_{NXP}*.

- Incorrect/missing verb stem. Note that e.g. *if I* for 1 has 3 mistakes (missing tense, missing verb stem, missing object).
- Incorrect subject and/or object. INCORRECT SUBJECT AND OBJECT COUNTS AS A SINGLE MISTAKE. Treat extra/missing SG/PL as incorrect pronoun. E.g. *I am forgiving you* or *you are forgiving them* instead of *you_{SG} are forgiving them* are both a single mistake.
- Additional verb or additional pronoun in sentence. E.g. *if you_{SG} forgave_{NXP} them for biting you_{SG}* for 5 has two mistakes (additional verb, additional pronoun).

Q 9.2 Max 26. Award 1 pt for each component separated by + in the correct order, ignoring any additional letters. Then for each word, award an extra 1 pt if the answer is completely correct, i.e. all correct components are present in the correct order, and there are no additional components.

Note that **thla y+** is one component, not two. E.g. for 6, both **hitoli je** and **thla kvhijetolikas** score 2 pts.

Problem 9. Cherokee Commentary

The following suffices for solving the problem, although is very simplified compared to the real Cherokee verbal system. In particular, there are many morphophonological processes that can result in morphemes having very different surface forms in different environments.

SLOT -3	SLOT -2	SLOT -1	ROOT ⁵	SLOT +1	SLOT +2 ⁶
thla yi = <i>not</i> yi = <i>if</i> ⁴	v ² = <i>again</i>	kv = 1 _{SG} > 2 _{SG} jv ³ = 1 _{SG} > 2 _{PL} ji = 1 _{SG} > 3 _{SG} ⁴ ski ^X = 2 _{SG} > 1 _{SG} hi = 2 _{SG} > 3 _{SG}	yohl = <i>recognise</i> toli = <i>forgive</i> skahl = <i>bite</i>	ka = present jv = past _{EXP} je = past _{NXP}	s = question ju = <i>right?</i>
yi + v → yv					

1. **yi-** actually marks the irrealis. Here the common usage of a conditional irrealis has been translated as *if*.
 2. The basic form of this is **i**, but here it only occurs in environments that trigger the alternative form **v**.
 3. This form actually only indicates that one of the subject or object is plural. Here it has always been translated with a singular subject. The basic form is also preceded by an **i** that is always elided in forms present in the problem.
 4. *Them* is being used as a gender-neutral, rather than plural pronoun.
 5. Cherokee verbs actually have 5 roots. In this problem only the completive roots (**ohlj**, **tolij**, **skahlj**) and present continuous roots (**ohlka**, **tolika**) are used. The completive is then used with either the experienced past (**v**) or non-experienced past (**e**). Contestants are expected to analyse the **j** in the completive as part of the suffix, and analyse **-ka** as a present tense suffix to deduce the root **skahl-ka** by analogy. This is a valid analysis within the context of the problem, but would be problematic if more verbs were introduced (e.g., *to see* with completive/present continuous stems **koh/kohwthiha**). The **y** present before *to recognise* occurs between the pronominal prefixes and a vowel. Note that actually we would expect **ski-ohl** > **skwohl**, but this does not feature in the problem.
 6. These are actually clitics rather than true suffixes. **ju** is used to indicate a question where the expected answer is affirmative.
- X. This is the only prefix which does not trigger a phenomenon known as laryngeal alternation, which can lead to very noticeable changes in the morphology. This is not relevant within the problem, however.

References and further reading:

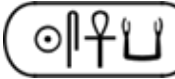
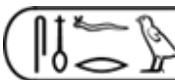
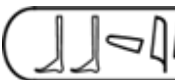
- Montgomery-Anderson B. *A reference grammar of Oklahoma Cherokee*. University of Kansas; 2008.
- Cook WH. *A Grammar of North Carolina Cherokee*. Yale University; 1979.
- Scancarelli J. *Grammatical relations and verb agreement in Cherokee*. University of California, Los Angeles; 1987.

Problem 10. Egyptian (25 marks)

The Ancient Egyptian language is most known for one of its writing systems, the hieroglyphic script, which was deciphered in the 1820s after the discovery of the Rosetta stone. Although it is now long extinct, its descendant Coptic may have been spoken in some communities as late as the 19th century. One dialect of Coptic is even used as the liturgical language of the Coptic Christian churches, in a similar way to how Latin is used in the Catholic church. The ancient Egyptians were not Christians, instead having gods like **Ra** the sun god, and **Zeker** the god of death.

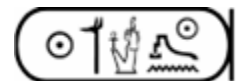
The Saqqara Tablet is a list of Egyptian pharaohs engraved over 3,000 years ago. Here are some Egyptian inscriptions from the tablet written in the hieroglyphic script:



- | | | |
|--|---|---|
| 1.  | 6.  | 11.  |
| 2.  | 7.  | 12.  |
| 3.  | 8.  | 13.  |
| 4.  | 9.  | 14.  |
| 5.  | 10.  | 15.  |

Scholars use two systems of rendering Egyptian inscriptions in the Latin alphabet. The system that reflects the hieroglyphic spelling is called *transliteration*. The system that is used to pronounce transliterations is called *Egyptological pronunciation*.

For example, the hieroglyphic inscription of the regnal of pharaoh Ramses the Great is given to the right. It has transliteration *r'-wsr-m't-r'stp:n*, and Egyptological pronunciation **User Maat Ra, setep en Ra**.



Below are the names of the same fifteen pharaohs, given in both transliteration and Egyptological pronunciation. There are some gaps numbered (1-7) and some transliterations are not given. Note that *d*, *h*, *j*, *w*, *x*, *y*, *'*, and *ʔ* are consonants. *Ø* denotes a hieroglyph that is not pronounced. In one name 1-15, the hieroglyphs come in a different order to what you might expect given the transliteration and Egyptological pronunciation.

- | | | | |
|---|----------------------|----------------------------------|----------------------|
| a. ____ (1) ____ | Neb ka Ra | i. _____ | Khufu |
| b. ____ (2) ____ -'nx-kʔ | Sankh ka Ra | j. <i>h-hw-____ (6) ____:y:Ø</i> | Huni |
| c. <i>r'-hʔpt-nb</i> | Neb hapet Ra | k. <i>r'-dd-dd-f</i> | Djedef Ra |
| d. _____ | Sehetep ib Ra | l. <i>r'-nbw-kʔ</i> | Nebu ka Ra |
| e. <i>b-b-Ø-j-j</i> | Beby | m. _____ | Kheper ka Ra |
| f. ____ (3) ____ -nfr-fr- ____ (4) ____ | Seneferu | n. <i>r'-x'-xpr</i> | Kha kheper Ra |
| g. ____ (5) ____ | Djeser | o. <i>dsr-____ (7) ____</i> | Djeser Teti |
| h. <i>r'-x'-kʔ</i> | Kha ka Ra | | |

[This problem continues on the next page.]

Q 10.1 Determine the correspondences between 1 - 15 and a - o.

Q 10.2 Fill in gaps (1 - 7). Note that some gaps may correspond to more than one hieroglyph.

Q 10.3 **Khufu** usually has a different inscription. What is that inscription? (Do not stack hieroglyphs on top of each other. Your hieroglyphs do not have to be perfect, so long as it is clear what is meant.)

Q 10.4 Give the transliterations of the following inscriptions. For 16 and 17, also give the Egyptological pronunciations.



Q 10.5  is read A B **Zeker**. What are A and B?

Problem 10. Egyptian Answers

For **Q10.1** write the corresponding letter under each item.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
c	b	d	m	l	n	h	k	i	f	j	a	o	g	e

10.2	1. $r^c / :nb / -k^3$ [3]	4. w [1]	6. n [1]
	2. $r^c / -s$ [2]	5. $dsr / -r$ [2]	7. $t / :t / -j$ [3]
	3. s [1]		

10.3	
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10.4	Transliteration	Egyptological pronunciations
	16. $r^c / -x^c / -nfr$ [3]	16. Kha nefer Ra
	17. $t / :t / -j$ [3]	17. Teti
	18. $p / :p / -j / -j$ [4]	
10.5	A. Nefer	B. ka

Maximum 62 pts.

Q 10.1 Max 30. 2 pts each.

Q 10.2 Max 13. 1 pt for each component separated by a bar / in the correct order. Each component must have the correct hyphens (-) and/or colons (:). They should not contain any bars.

If all correct components are given, and extra components are also given, deduct 1 pt. Only do this if all correct components are given. E.g. $-s^c$ scores 1 pt as an answer for 2 (for containing $-s$) but 0 pt as an answer for 3, as a point is deducted.

Pay close attention to bars under letters. E.g. $dsr-r$ for 5 scores only 1 pt.

Q 10.3 Max 5. 5 pts if correct. Ignore whether or not the cartouche (oval+line) is drawn, award credit for the hieroglyphs inside. If not correct, award 1 pt per correct hieroglyph in the correct order. Do not penalise stacking hieroglyphs. Do not penalise poor drawings, so long as it is clear what was intended. Do not allow e.g., reeds for chicks, or water for the horned viper.

Q 10.4 Max 12. 1 pt for each component separated by a /, exactly as in 10.2. 1 pt for correct Egyptological pronunciation in 16 and 17.

Allow the transliteration in the second column and the Egyptological pronunciation in the first column, if done consistently.

Q 10.5 Max 2. 1 pt each.

Problem 10. Egyptian Commentary

The direction of writing is toward the vertical line at the end of the oval (which together with the line is known as a cartouche) and top to bottom. Hieroglyphs face away from the vertical line. Scribes moved the names of gods like **Ra** to the beginning of phrases in inscriptions (to show reverence).

Hieroglyphs can stand for words or consonant combinations. Sometimes they clarify the reading of previous hieroglyphs. In the transliteration, the mark - indicates separate hieroglyphs horizontally, and the mark : indicates separate hieroglyphs vertically.

Egyptological pronunciation: ' → **a**, ʾ → **a**, j,y → **i**, w → **u**, jj → **y**, d → **dj**, h → **h**, x → **kh**; otherwise X → **X**. Usually, **CC** → **CeC**, (C = consonant), although this is more irregular.

References and further reading:

- <https://pharaoh.se/ancient-egypt/kinglist/saqqara-canon/>
- <https://www.egyptianhieroglyphs.net/gardiners-sign-list/>