第一届国际理论、数理及应用语言学奥林匹克竞赛

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个人赛题解

第一题

1. Nouns:
   - $\dot{\Lambda}$ 'man', $\dot{\Delta}$ 'woman', $\dot{\imath}$ 'boy', $\dot{\triangle}$ 'girl', $\boxtimes$ 'letter', $\square\!\!-$ 'work'.
     - Combinations: $\dot{\Lambda}\dot{\Delta}$ 'man + woman = husband + wife', $\dot{\imath}\dot{\triangle}$ 'boy + girl = brother + sister', $\dot{\Lambda}\dot{\Delta}\dot{\imath}\dot{\triangle}$ 'man + woman + boy + girl = family'.
     - Family members are singled out by division and cancellation: $\frac{\dot{\Lambda}\dot{\Delta}\dot{\imath}\dot{\triangle}}{\dot{\Delta}\dot{\imath}\dot{\triangle}}$ 'family/(woman + kids) = father', $\frac{\dot{\imath}\dot{\triangle}}{\dot{\triangle}}$ 'kids/girl = brother', $\frac{\dot{\Lambda}\dot{\Delta}\dot{\imath}\dot{\triangle}}{\dot{\imath}\dot{\triangle}}$ 'family/kids = parents'.
     - Missing (deceased) family members are preceded by a minus sign: $\frac{\dot{\imath}\dot{\triangle}(-\dot{\Lambda}\dot{\Delta})}{(-\dot{\Lambda}\dot{\Delta})}$ 'kids (−parents)/(−parents) = orphans' (apparently orphaned children of one and the same family).
   - $\dot{\text{I}}$ 'person', $(>\dot{\text{I}})$ 'giant'.
2. Pronouns are composed of the character $\dot{\text{I}}$ or $\dot{\Delta}$ (for feminine gender) and the subscripts 1 to 3, which indicate the person.
3. The plural of nouns and pronouns is expressed by the coefficient n. The plus sign plays the part of the conjunction 'and'.
4. Verbs: $\lessdot$ 'talk', $\square\!\!-$ 'work', t 'hurry', $\diagup$ 'write', $\heartsuit$ 'like, love', $\cap$ 'eat'. If what the verb denotes is absent or uncharacteristic, a minus sign expresses that: $-\heartsuit$ 'not inclined to affection = wicked'. (We can assume that a characteristic property is expressed by a plus sign, hence $+\heartsuit$ 'good', a concept we need.)
5. Sentence structure:
   - the subject is the base of the power;
   - the predicate is the exponent, whereby negation is expressed by a minus sign ($-\heartsuit$ 'not like') and passive voice by a radical sign ($\sqrt{\diagup}$ 'be written'); additional activities can be added or subtracted ($\dot{\text{I}}_3^{\square\!\!--\text{t}}$ 'he is working and doesn't hurry = he is working without haste');
   - past tense is marked by $-\text{t}$ ($\dot{\text{I}}_3^{\square\!\!-}-\text{t}$ 'he worked'), future tense by $+\text{t}$;
   - the direct object, if there is one, follows an equals sign.

任务一：

9. He loves with an unrequited love (*i. e.* loves without being loved).
10. The taciturn (*or* mute) daughter will write about the father and the mother.
11. You (sg. fem.) worked quickly (*or* hastily) and silently.
12. The letter was eaten by the hungry sister.

任务二：

13. $(\dot{\Delta}_1+\frac{\dot{\Lambda}\dot{\Delta}}{\dot{\Delta}})^{\lessdot}-\text{t}=-\text{n}\dot{\text{I}}_3$
14. $(\text{n}\dot{\text{I}})^{\square\!\!--\heartsuit}$
15. $(\frac{\dot{\Delta}(-\dot{\Lambda})}{(-\dot{\Lambda})}+\heartsuit)^{\heartsuit}=(<\dot{\text{I}})-\square\!\!-$
16. $(\text{n}\dot{\text{I}}_2)^{\sqrt{\lessdot}}+\text{t}$

第二题

题所有的阿拉伯单词均符合以下模式之一：*1a2a3t*、*i12ā3*、*1u23* 火 *1u23ēn*（符合一二模式的单词均按此顺序出现，而符合三四模式的单词均独立出现）。在这些模式中，*1-2-3* 是以下辅音三元组之一：*r-b-ʕ*、*s-b-ʕ*、*s-d-s*、*t-l-t*、*t-m-n*、*t-s-ʕ*、*x-m-s*、*ʕ-š-r*。让我们假设每个辅音三元组对应一个一与十之间的数字，以及元音的特定排列起到特定的功能：*1a2a3t i1′2′ā3′* 是 $\frac{\mathfrak{n}}{\mathfrak{n}'}$ 或 $\frac{\mathfrak{n}'}{\mathfrak{n}}$（不管哪种情况，$xamast\ ixm\bar{a}s = \frac{\mathfrak{n}}{\mathfrak{n}} = 1$），且 $1u23 = \frac{\mathfrak{i}}{\mathfrak{n}}$、$1u23\bar{e}n = \frac{\mathfrak{j}}{\mathfrak{n}}$，虽然 $\mathfrak{i}$ 与 $\mathfrak{j}$ 仍然未知。

由等式 (5) 我们可以发现 *s-b-ʕ* 和 *x-m-s* 是 5 和 7（两种对应顺序均有可能），并且，由 $\frac{\mathfrak{j}}{5} + \frac{\mathfrak{j}}{7} = \frac{(7+5)\mathfrak{j}}{35} = \frac{24}{35}$ 可知，$\mathfrak{j} = 2$，也就是说，$1u23\bar{e}n = \frac{2}{\mathfrak{n}}$。由于 *1u23* 比 *1u23ēn* 更短，我们可以假设前者对应着一更基础的功能，即 $\frac{1}{\mathfrak{n}}$。

由 (1) 可知，*t-l-t* is 3（以及在阿拉伯分数中，分子在分母之前）。由 (4) 可知，*t-m-n* 比 *s-b-ʕ* 大一。由 (3) 可知，3*s-d-s* $= 2$*t-s-ʕ*。因此，*t-s-ʕ* 可被三整除。由于 3 是 *t-l-t*，*t-s-ʕ* 与 *s-d-s* 分别是 6 和 4 或者 9 和 6，以及 *t-m-n*、*s-b-ʕ* 和 *x-m-s* 分别是 8、7 和 5。

我们还没有看等式 (2)。*s-d-s* 显然不等于 4 （$\frac{7}{3} + \frac{1}{4} = \frac{31}{12}$ 并不能约为一个分子分母均小于等于十的分数），因此，*s-d-s* $= 6$，且 $\frac{7}{3} + \frac{1}{6} = \frac{15}{6} = \frac{5}{2} = \frac{10}{4} =$ *ʕ-š-r*/*r-b-ʕ*。

任务一： (1) $\frac{1}{8} + \frac{2}{8} = \frac{3}{8}$, (2) $\frac{7}{3} + \frac{1}{6} = \frac{10}{4}$, (3) $\frac{2}{9} + \frac{1}{9} = \frac{2}{6}$, (4) $\frac{5}{5} + \frac{1}{7} = \frac{8}{7}$, (5) $\frac{2}{7} + \frac{2}{5} = \frac{24}{35}$.

任务二： $rub\varsigma + \varsigma a\check{s}art\ its\bar{a}\varsigma = \frac{1}{4} + \frac{10}{9} = \frac{49}{36}$ ，$saba\varsigma t\ isd\bar{a}s = \frac{7}{6}$。因此，$\sqrt{rub\varsigma + \varsigma a\check{s}art\ its\bar{a}\varsigma} = saba\varsigma t\ isd\bar{a}s$；或者，如果括号不算符号的话：$rub\varsigma + \varsigma a\check{s}art\ its\bar{a}\varsigma = (saba\varsigma t\ isd\bar{a}s)^2$。

第三题

here are two types of English expressions in the problem: some (I) consist of a date, a month and a day of the week, others (II) name the number of the day of the week within the month instead of the date. The word order in the Basque expressions of type (I) is ⟨month⟩ ⟨date⟩, ⟨day of the week⟩, whilst in type (II) it is ⟨month⟩ ⟨number of the day⟩ ⟨day of the week⟩. The last word ends in *-a*, whereas the preceding words have no final *-a* (except for the word *hogeita*, which means '20' in compound numerals). The element *-garren* forms ordinal numbers. The word *astea* is not a name of a day of the week (six of those we have seen in examples 1–10, the seventh occurs in Assignment 3). Since Assignment 2 features the word 'week', we can guess that this is the meaning of the word *astea*.

任务一:

urtarrilaren hogeita hirugarrena, larunbata	一月二十三日，周六
abenduaren azken astea	十二月的最后一周
otsailaren lehenengo osteguna	二月的第一个周四
ekainaren bederatzigarrena, igandea	六月九日，周日
abenduaren lehena, asteazkena	十二月一日，周三
irailaren azken asteazkena	九月的最后一个周三
azaroaren hirugarren ostirala	十一月的第三个周五
urriaren azken larunbata	十月的最后一个周六
irailaren lehena, astelehena	九月一日，周一
urtarrilaren bigarrena, ostirala	一月二日，周五

任务二:

十二月的第一个周一	*abenduaren lehenengo astelehena*
十一月二十九日，周六	*azaroaren hogeita bederatzigarrena, larunbata*
一月的第二周	*urtarrilaren bigarren astea*
二月三日，周一	*otsailaren hirugarrena, astelehena*

任务三: *Astelehena* 'Monday', *asteazkena* 'Wednesday'; *asteartea*, the only day of the week not found in in Assignment 1, is 'Tuesday'. All three names are formed from the word *aste* 'week'. *Astelehena* means literally 'first (day) of the week', *asteazkena* 'last (day) of the week'. Tuesday's Basque name can be translated more or less as 'day in the middle of the week'.

No one knows for sure why Basque calls Wednesday 'last day of the week'. In Basque dialects other variants of the names of the days of the week are also found, including loans from Romance languages.

第四题

he Adyghe sentences have the following structure:

(1, 3, 4)	X-*r*	Y-*m*	P-*e*-V.	'He V X P Y.'
(2, 5)	*syda*	Y-*m*	P-*i*-V-*rər*?	'What does he V P Y?'
(6, 7)	X-*r*	*tyda*	*zy*-P-*i*-V-*rər*?	'Where does he V X?'

where X and Y are nouns, V is a verb (or its stem) and P is, in English, one of the prepositions *into*, *onto* or *under* and in Adyghe it is one of the prefixes *d-*, *tyr-* or *ć-*. As the third schema shows, the Adyghe locative prefix may not correspond to anything in the natural (but imprecise) English translation.

任务一: We specify (at the expense of naturalness):

6. 他把[这]碟子放在什么的下面?
7. 他把[这]碟子投在什么的上面?

任务二:

8. 他把[这]凳子投在[这]炉子里面。
9. 他把[这]钱落在什么的里面?

任务三:

10. *laʁər śanyćym ćeʁəuco.*
11. *syda pχwantym ćizərər?*
12. *syda śywanym diʁafərər?*

任务四:

13. *ʔanyr tyda zydiʁəucorər?* 他把[这]桌子放在什么的里面??
13′. *ʔanyr tyda zytyriʁəucorər?* 他把[这]桌子放在什么的上面??
13″. *ʔanyr tyda zyćiʁəucorər?* 他把[这]桌子放在什么的下面??

第五题

réassortir	再次采摘	*assortir*	采摘
récurer	清洁	*curer*	清洁
réformer	改革	|||||||||||||||||||||	
reformer	再次形成	*former*	形成
réfuter	反驳	|||||||||||||||||||||	
relancer	再次投	*lancer*	投
rémunérer	赔偿	|||||||||||||||||||||	
répartir	分配	|||||||||||||||||||||	

The table features verbs with two different prefixes: *re-* and *ré-*. All verbs with *re-* indicate a repetition or a renewal of the action named by the verb without a prefix. Contrariwise, if the prefix is *ré-*, then the corresponding prefixless verb either doesn't exist or means the same thing as the prefixed one does. The verbs whose stems begin with vowels are an exception: the prefix they take is *ré-* regardless of the existence and the meaning of a corresponding prefixless verb. There are other exceptions from this rule in French, but on the whole it is fairly reliable.

注: The vowel in the prefix *ré-* is not unlike the first vowel in *raider*, whereas the one in the prefix *re-* bears a certain similarity to the second, and needs to be fortified when it finds itself next to another vowel.

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