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Examiners' Report/
Principal Examiner Feedback

Summer 2015

PLSC Science (JSC01/01)
Year 6 Achievement Test

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Summer 2015
Publications Code PL042423

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General comments

This was the fourth examination for the Year 6 Achievement Test in science to which we welcomed many additional new centres and their candidates. Overall, candidates were once again well prepared and many had a very sound knowledge of science at this level.

Examiners were particularly encouraged to see that many returning centres had once again acted on feedback in reports from previous examination series. The amount of 'copying out sections of the question to construct an answer' has fallen significantly over the life of the qualification. This had been mentioned in several previous examiner reports and has clearly been passed on as advice to candidates; few examples of this practice were seen this year.

Many candidates attained, or came close to, full marks on the first two multiple-choice sections of the paper and high scores were also seen in the third, more challenging set of multiple-choice questions.

In open response questions, many candidates demonstrated their proficiency in recall of scientific terms and understanding of scientific principles. Although the quality of answers in section B is improving year on year, this continues to be the area where some candidates' overall performance could be raised further. Some candidates who score very high marks in section A do not sustain this high performance in section B.

Those candidates achieving P3 were usually able to demonstrate consistently high standard in all parts of the paper and the overall performance of the cohort once again reflected thorough preparation by both candidates and centres.

Comments on individual questions

Section A

Questions 1 to 8

Almost all candidates who received an award were able to answer most of the first section of multiple-choice questions correctly, with the many able candidates scoring full marks in this section.

Question 9

The majority of candidates correctly linked the skulls and food type for 2 marks.

Question 10

Candidates scored the full range of marks awarded. Although some candidates had difficulty in expressing their answer, many clear, concise

answers were seen. These two mark answers usually related to the spread of the fire followed by suggestions relating to smoke hazards, such as breathing problems; the possibility of burns or death was the least commonly made suggestion. Examiners were looking for two distinct hazards. Candidates scoring one mark often focussed on describing one hazard in detail such as listing two items that might catch fire or two aspects of smoke inhalation such as coughing and breathing difficulty.

Question 11 (a) and (b)

Many candidates correctly gave the unit of force and the majority gave a correct reading from the force meter. Candidates who gave an incorrect force meter reading usually gave the value 7 rather than 3, having read from the bottom of the scale rather than from the top.

Questions 12 to 20

Many candidates scored high marks in the second section of multiple-choice questions, with the most able candidates often scoring full marks.

Question 21

Most candidates were able to complete both sentences correctly.

Question 22

Most candidates were able to define the term opaque accurately and concisely. Candidates who did not score this mark generally made reference shadow formation without reference to blocking of light.

Question 23 (a) and (b)

Both parts of this question were answered well by the majority of candidates and the full range of acceptable answers was seen. Some candidates referred to the buzzer as a bell. A few candidates appeared unfamiliar with this topic.

Question 24

Many candidates gained two marks by choosing features clearly observable on these animals. Others answered the question more generally, sometimes with features that would not discriminate e.g. invertebrates. Others did not use the pictures to help them identify suitable features but attempted to draw on their knowledge of other biology or habits of the organisms e.g. sliminess or colour. Candidates' attention should be drawn to the use of the phrase 'these animals' in this and similar question stems.

On an international paper, examiners do not expect candidates to have detailed knowledge of individual genera or species, particularly when these may be native to only certain habitats. Therefore in examinations, candidates should construct keys based on observable features in the drawings or photographs provided. Similarly, interpretation of keys should be based on the questions, statements or information provided. In both cases, the skill being tested is the ability to construct and/or interpret a key.

Questions 25 to 32

This third section of multiple-choice questions was more demanding, although the most able candidates again gave very strong performances, often scoring close to full marks. There was no particular pattern to wrong answers throughout the section.

Question 33

Almost all candidates were able to identify the reversible and irreversible change correctly, using the vocabulary on the photograph for guidance. A small number of candidates reversed the answers for part (a) and part (b). As with Q24, candidates' attention should be drawn to wording in the question stem; 'this candle' is used to cue them into use of the illustration for help with their answer, in this case with the vocabulary required.

Question 34

Most candidates scored at least one mark, with many scoring both marks. Candidates scoring one mark usually gave the colour of the petals only. As with the key in question 24, no prior knowledge of the flowering plants described was expected.

Question 35

Most candidates showed a clear understanding of the direction in which light would travel. Of these, a significant number drew separate arrows next to the rays, but if these were in the correct direction they were credited.

Question 36 (a) and (b)

This continues to be a topic where candidates perform less well. The term emulsion and the examples on the specification in this topic area are not widely known.

Section B

Question 37

This question discriminated well between candidates who had transferable knowledge and skills as a result of familiarity with investigative work and those whose knowledge was limited to more basic concepts such as fair testing.

Most candidates answered part (a) correctly; part (i) was almost always the part that was correct in answers scoring only 1 mark.

In part (b), the full range of marks was awarded. Many candidates continue to find the description of a pattern/trend in results difficult. Generic guidance to candidates preparing for the examination regarding reference to both variables and use of comparative terms such as greater/brighter/faster etc. would improve the overall quality of such answers in the future. Only the most able candidates scored both marks. This gave a clear generalisation of the trend in the results matching the prediction. This also pointed out that thick and medium wire gave the same result. The phrase 'fully agree' is intended to cue candidates into addressing both points.

In part (c) some good answers were seen where various ways of e.g. making the results more quantitative, were seen.

Question 38

The questions as a whole discriminated between candidates whose knowledge of investigative science was more versatile and those with purely learned knowledge.

In part (a), most candidates successfully named the containers as beakers but weaker candidates often gave 'A and B' as their answer. Almost all candidates were successful in part (b).

In part (c) the full range of marks was seen, with 1 mark being the most common score. Many candidates scoring one mark made a correct reference to the idea of evaporating but did not go on to say how they would know which was the sugar solution as a result of doing this.

Part (d) also generated the full range of marks with the most able candidates drawing very sophisticated results tables with units in the column heading only and the independent variable in the first column. Weaker candidates repeated units down the column(s), or did not indicate units. A significant number of candidates attempted to draw a graph or a bar chart.

Some candidates missed answering part (e). Of those who did answer it, there were surprising numbers of completely incorrect height bars (rather than just out of plotting tolerance).

Summary Section

Based on their performance on this paper, candidates should:

- continue to develop their understanding of investigative skills such as looking for patterns and trends in results and reasons why results are repeated or sometimes ignored;

- be taught how to construct simple generic answers to describe a relationship between two variables. An example format that could be learned is: 'as the [independent variable] does this, the [dependent variable] does this'. The terms used to describe what each variable 'does' should indicate whether it increases/decreases or becomes greater/brighter/faster/slower etc. More able candidates may then be guided to look for instances where there is an anomaly.

- be given further opportunities to construct tables of results using scientific conventions (see mark scheme for question 38(d)) and plot bar charts, or other representations of data, with accuracy;

- be guided on how best to identify key words or phrases in the question stem, in addition to the command word, which may help with the answer; this might include a reference to a diagram or other illustration;

- be guided to take into account the number of marks allocated to an answer; extended prose with more than one mark will often require two or more distinct ideas/statements/facts rather than repetition or embellishment of just one.

Candidates are only expected to write answers of the length indicated by the answer space provided; it should not be necessary to issue additional paper.

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