

Examiners' Report/
Principal Examiner Feedback

Summer 2016

Pearson Edexcel PLSC
in Science (JSC01)
Year 6 Achievement Test

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General comments

This was the fifth examination for the Year 6 Achievement Test in Science, to which we again welcomed many additional new centres and their candidates. Examiners continue to be impressed by the very sound knowledge of science demonstrated by many candidates at this level.

It was evident that many returning centres had once again acted on feedback in reports from previous examination series. Year on year there is evidence that candidates' answers are becoming more concise and factual.

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 continues to improve 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. For example, the naming and uses of apparatus such as beakers and measuring cylinders and basic features of experimental design such as fair testing and repetition appear to be less well known and understood.

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 10

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 11

The majority of candidates correctly linked the animals to their likely habitat for 2 marks.

Question 12

Candidates scored the full range of marks awarded. Although some candidates had difficulty in expressing their answer, many clear, concise answers were seen. A comparative answer was required since a statement such as 'they will be bright' is insufficient for a description of how the brightness changes. Many good answers were seen, often using phrases such as 'brightness increases' or 'the lamps will be brighter'. Candidates should be discouraged from writing alternative answers, as those who do often contradict themselves.

Questions 13 to 21

Many candidates scored high marks in the second section of multiple-choice questions, with the many candidates scoring at least 9 out of the 10 marks. Question 18 proved the most challenging, with the majority of candidates selecting C rather than A.

Question 22 (a)

Most candidates were able to identify a producer and a herbivore. Many also showed understanding of the terms predator and prey but less able candidates often confused the two.

Question 22 (b)

Many candidates supplied a life process but a significant number did not read the question carefully and chose 'eating' or 'feeding'. Some candidates stated 'breathing' or 'taking in air' rather than respiration. It was evident from rough notes that some candidates had been taught a mnemonic for recalling the life processes; centres may wish to encourage this, as it was usually accompanied by a correct choice of answer.

Question 23 (a)

Some candidates answered this with no evidence of deliberation and scored all three marks. However, a significant number of candidates were undecided about their choices – some gave several ticks per row and others had several attempts with crossing out before reaching an answer. Candidates who did not score all three marks often indicated that the middle ball would not move but then chose the incorrect direction (often the exact opposite of the correct answer) for the other two balls. The question discriminated well across the ability range.

Question 23 (b)

Most candidates knew the unit of force. Incorrect *units* were seldom seen; the most common incorrect answers were apparatus names such as force meter and variations of anemometer.

Questions 24 to 29

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

Question 30

Almost all candidates gave a correct answer for part (a) but fewer did so for part (b). As with Question 12, comparative answers were required to describe how the size of the shadow *changes*.

Question 31

This question was well answered by the majority of candidates. In part (a) most candidates gave the required answer 'water', but some incorrectly attempted to qualify this as 'icy water' or to describe it as 'melted ice.' Most candidates gave correct answers in part (b)

Question 32

Many candidates gave clear working in the answer space and a correct answer. A significant number attempted to show working on the graph, which if detailed would have been an alternative way of achieving the marks. However, many such attempts involved use of wavy lines rather than straight lines, making reading off the y axis inaccurate. Some candidates did not understand what was required and gave the answer 20 with working of 60-40 shown.

Section B

Section B 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.

Question 33

Few candidates scored full marks in part (a); 'thermometer' was almost always the 1 mark answer. For a second piece of equipment, many candidates gave 'beaker' as their answer rather than, for example, 'measuring cylinder'. Reference to the use of a balance to weigh out the sugar was sometimes incorrectly included here.

In part (b), fair testing was well understood by most candidates, many of whom went on to score full marks in parts (c) and (d) too.

Question 34

In part (a), most candidates successfully selected measuring cylinder R.

In part (b) the full range of marks was seen, with only the most able candidates scoring all three marks. Many candidates indicated in part (i) that 95 or 24 was the likely incorrect result, or circled a whole row. In part (ii) there were surprising misunderstandings of the data, resulting in many candidates suggesting that room temperature was 95°C. Other misunderstandings led to an answer of 20°C, justified as 'room temperature is always 20°C'.

Question 35

In part (a), most candidates successfully completed the table.

The missing bars in part (b) were badly plotted by a very large number of candidates. Bar widths and positions not only varied from the pattern set, but also between a candidates' own two plots. More significantly, many bar heights were inaccurate and the bars themselves were often drawn freehand with scribbled shading adding to the inaccuracy.

Part (c) discriminated well, with most candidates giving a correct choice for the first and fourth statement. High achieving candidates gave correct choices for three or all four statements.

Summary Section

Based on their performance on this paper, candidates should:

- Continue to develop their understanding of investigative skills, in particular basic apparatus names and their specific uses e.g. beaker, measuring cylinder, thermometer, scales/balance, ruler;
- Be given more opportunities to interpret *sets* of results on tables, looking for concordance and how this can be achieved.
- Be given further opportunities to suggest simple explanations for anomalous results that are context specific e.g. unequal stirring, rather than generic reasons such as making a mistake.
- Be guided on the importance of accurate plotting of graphs and bar charts by developing understanding that each plot represents a specific value.
- Develop a clearer understanding that the direction of a force arrow represents the direction in which that force is acting.

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.

Candidates should write in black ink, not blue or pencil.

