Examiners' Report
Principal Examiner Feedback

Autumn 2022

Pearson Edexcel International Achievement Test – iPrimary Year 6 (JSC11/01)

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General comments

Candidates worked well on this paper, trying hard to demonstrate their level of scientific achievement. Candidates tried hard to use their scientific vocabulary in answers. Most questions were attempted, showing their determination to do well. Candidates seemed to have sufficient time to answer the questions, and presented work neatly, trying to keep to the answer in the space provided. The bar graph was generally drawn using a ruler which improves neatness and accuracy.

Centres and teachers had evidently prepared candidates well for this exam. Candidates generally showed a good understanding of scientific terminology needed to be able to access some of the more challenging questions, and to provide complete answers to them.

Some candidates still need to be encouraged to read questions carefully, particularly the lower achieving students, and to provide a little more detail in questions worth 2 marks.

Those candidates achieving P3 demonstrated their ability across the specification, as well as in Section B. They provided detailed answers for questions of 2 marks and were able to link their ideas. Those borderline candidates aspiring to P3 could focus on ensuring their understanding of variables to keep the same, change or measure, and to understand why controls may be used, in order to compare results in a more scientific way in their investigations.

Comments on individual questions

Section A

Multiple choice questions are marked by computer, so it is not possible to comment on how candidates achieved on these.

Question 11

(a) Most P3 and P2 candidates could answer this question correctly. Many of the P1 candidates also achieved this mark, although some only ticked one box, and some thought that binoculars are used to look at bacteria rather than a microscope.

(b) The majority of candidates scored one or both marks and could state a variety of food hygiene precautions to take when making a sandwich. The most common error was for candidates to state that once the sandwich was made it should be put in the fridge again, however they were only asked about making the sandwich, not storage.

(c) The majority of candidates who achieved a grade were able to express that not using food hygiene procedures could lead to food poisoning or illness of some type.

Question 12

The majority of candidates were able show that the rocket became larger on the screen when it was moved closer to the light source, or moved further from the screen. Some P1 candidates only circled one item and so did not score the mark.

Question 19

Many candidates scored at least one mark in identifying the features of plants found in the two habitats. A common error was candidates failing to draw a line from all of the features to a habitat, and of those who did, some identified 'long roots to find water' to the rainforest rather than the desert.

Question 20

(a) (i)Many P1 and some P2 candidates stated that a sieve should be used for separating the sand from the water, without appreciating that sand is too fine for a sieve and so most would pass through. The majority of P3 candidates were able to give the correct answer of filtration.

(ii)Some candidates were aware that the water vapour needed to be cooled in order to condense it again. Some candidates simply stated 'put a lid on the container' which did not quite reach the point that it needs to be cooler than the vapour for it to condense.

(b) Most P2 and P3 and many P1 candidates correctly gave 'state' or 'state of matter' but 'matter' alone was insufficient for the mark.

Question 21

(a) A significant number of candidates scored one mark here, with more able candidates scoring both. Common errors were stating that it was to do with the planets orbiting the Sun at different rates, rather than the rotation of the individual planets. Candidates do need to word answers carefully to ensure they are clear it is the spinning or rotation on its axis for day and night.

(b) Most P3 and many P2 candidates were able to explain this, although some needed to take a little more care with how they expressed it. Some incorrectly stating that 'the sun reflects light to the Moon' rather than 'the Moon reflects the Sun's light'. A small number of weaker candidates stated that the Sun's light passed through the Moon.

Question 22

The majority of candidates achieved this mark, and could correctly match the activity to the breathing rate. Some lower achieving candidates chose their own activities rather than using the ones provided for them.

Questions 27

The majority of candidates understood the effect of gravity on the ball. The most common error was stating ‘air resistance’ or ‘it is pushed down’. Gravity is a pulling force rather than a pushing force and so was not accepted.

Question 28

Many candidates recognized that bread turning into toast was irreversible, and that water turning into ice was reversible, many incorrectly gave salt dissolving in water as an irreversible reaction.

Question 29

The majority of candidates recognised the gas was a new substance formed and so the reaction was irreversible.

Question 30

(a)(i) A few candidates tried to name the forces, rather than use the letters on the diagram as directed. Usually these were incorrectly named, often being friction, air resistance or water resistance. For those who did use the letters, the most common error was to state A and D.

(a)(ii) Many candidates were able to state friction or air resistance, but a common error was stating weight.

(b) Candidates found this a more challenging question, with some P2 and P3 candidates stating the snow chains increased friction with ice, but only a few of the better candidates also stating that this improves grip to allow the vehicle to move.

Section B

In section B candidates demonstrated their knowledge and skills developed in during practical scientific studies and applied some of the scientific principles of fair testing and reliability to new situations, or to practicals they may have undertaken in the classroom. Candidates need to continue to develop their practice in this area, and develop a better understanding of accuracy compared to reliability. This is always an area for continued development as candidates find it difficult to apply their practical skills to new, novel situations.

Question 31

(a) Candidates found this question challenging. Candidates needed to look for data from the table to support the statement, which were the second and fourth row. Having identified one or both of these, they needed to explain that the results were lower after 6 weeks, which shows the person is fitter.

(b) Candidates often recognized that more oxygen was being delivered, but some weaker candidates would mention it going to the lungs, or the heart (heart muscle was acceptable) but fewer mentioned the muscles having the higher requirement for oxygen. Many P1 candidates simply stated 'the pulse rate increased'.

Question 32

(a) Most candidates who achieved a grade gained at least one mark here. Some of the weakest candidates named other pieces of equipment, such as the wire or the bottle. Some candidates just mentioned 'a scale' for taking mass, rather than a weighing scale or balance. A scale is found on most measuring devices, so candidates needed to be more specific for this mark. Only P3 candidates were able to achieve all three marks here.

(b) Many candidates at P3, and some P2's, could explain that the test needed to be repeated to improve reliability of the investigation. Other candidates suggested a variety of actions, including changing the length of wire, steepness of the wire or size of object put onto the wire.

(c) The majority of candidates achieved one mark, but only a few were able to correctly classify all four questions.

Question 33

(a) Many candidates recognized that the temperature or place where the ice was placed was important to keep the same, but others suggested the same shape or the time the ice was removed from the freezer. Other candidates were too vague, simply saying 'the plate' without saying what about the plate needed to be the same, or stated the dependent variable, the time taken to melt.

(b) (i) The majority of candidates were able to plot the bar correctly, although a few drew it to 230 rather than 330, or drew the top line by freehand and it became too slanted, which took it outside of tolerance.
(ii) Fewer candidates cored on this part. A significant number who had correctly drawn the bar in part (i), could not accurately read the value from the graph, often giving 250 seconds as their answer.

(iii) Many candidates correctly identified shape B as having melted fastest.

Question 34

(a) P3 candidates were more likely to score here, with few of the lower grades achieving this mark. Weaker candidates stated it would reduce the growth of the plants, rather than explaining it was needed so that a comparison could be made.

(b) In order to achieve both marks here candidates needed to identify the correct letter or number of teaspoons of fertilizer needed, then consider the growth of the radish root. As the length of the root was the same in two groups, they needed to mention circumference of the root rather than just the size of the root, which could mean length. As such, many P2 and P3 candidates scored the first mark, but only a few scored the second mark.

(c) All candidates found this a difficult question, with a few suggesting repeat the test, which was an acceptable answer. A teaspoon is not an accurate measure of a mass or volume (depending on the fertilizer being a liquid or a solid being added to the water) so ideally an improvement to the method of measurement was being looked for.

Summary section

Based on their performance on this paper, students should:

- aim to undertake a variety of practical work on a regular basis, taking care to choose appropriate safety equipment for that particular investigation of experiment.
- continue to develop their understanding of the terms accuracy and reliability and be able to apply these to different investigations.
- begin to look at investigation methods and think about how they could be improved, usually through improved accuracy of measurement or improved reliability of the investigation.
- P2 candidates need to continue to look at data sets and comparing them to a hypothesis given to see if they do support the statement, and if so, how.
- P1 standard candidates could be encouraged to read a question carefully so they understand how they need to answer a question.

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