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Examiners' Report

Principal Examiner Feedback

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Pearson Edexcel GCSE Combined Science  
(1SC0) Paper 1CF

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Question 1 (a)(ii) was generally well answered with the majority of candidates understanding how the molecules in ice and water are arranged and most scoring at least 1 mark and many scoring both marks available.

Candidates did not perform so well in part (b)(i) of question 1 with many stating that the water was not pure because of its pH. Candidates often referred to one of the impurities given on the label to score the second marking point but then went on to state that there should be less of this impurity rather than none or water being the only substance present.

In question 1(b)(iii) A good proportion of candidates were able to calculate the concentration of calcium ions in the drinking water to gain both marks. A common error seen was where candidates thought that the units of  $\text{cm}^3$  meant that the 250 should be cubed.

In part (c) the majority of candidates knew that calcium is found in group 2 or the left-hand side of the periodic table. In some cases, candidates stated that calcium is found in column 2 which was also acceptable and gained the mark.

Question 2(a)(i) was well answered with most being able to write the word equation for the reaction between chromium and oxygen. In some cases, candidates tried to write a symbol equation. Candidates should be taught that when asked to write a word equation, they should not attempt to write the symbol equation as this often results in no marks being scored.

Candidates also performed well in part (a)(iii) of question 2 with the majority being able to calculate the relative formula mass of chromium oxide to gain both marks.

Question 2(b)(iii) was less well answered. In some cases, candidates did not read the question carefully and gave an observation as to what happens when a gas is produced, such as bubbling, rather than the observation when the hydrogen was ignited. In other cases, candidates gave the result of a test with oxygen that the splint will relight rather than the result for the test with hydrogen.

Candidates also found part (c)(i) and (c)(ii) quite difficult with few scoring. In part (c)(i) some showed their understanding that iron is less reactive than carbon and so therefore iron can be extracted by heating the oxide with carbon. However, part (c)(ii) many thought that the reason that electrolysis is not used to extract iron

was that the iron would not be able to conduct electricity. A noticeable proportion left this question blank.

Question 3(c) was well answered with the majority of candidates being able to calculate the value of 200 atmospheres in Pascals to gain both marks.

Candidates found completing the equation for the formation of ammonia in question 3(d)(ii) much more difficult. The most common error seen was to write the formula of hydrogen as H<sub>3</sub> rather than H<sub>2</sub>. In some cases, candidates wrote the word nitrogen and hydrogen rather than the formula.

In question 4 part (a)(i) candidates could give a safety precaution that should be taken during the experiment with most knowing that safety goggles should be worn and in part (a)(ii) many candidates understood that a way to improve the method would be to measure the mass of solid that was added each time. A common incorrect answer seen was when students thought that a full spatula rather than half a spatula each time would produce more accurate results.

In question 5(a), many candidates did not score because they simply stated the negative of the statement in the stem. Those that scored often did so as they knew that today's model of atoms have protons and electrons.

Part (c)(i) of question 5 proved very difficult for candidates with few being able to give the correct formula and state symbols.

In 5(c)(iv) many candidates were able to gain one mark for stating that the reaction fizzed or bubbled. In most cases candidates stated both fizzing and bubbling and then stopped there thinking that they have given 2 different observations. Some candidates stated that a colour change would be seen but they did not state what colour and so did not gain the mark.

In question 6(b)(ii) many candidates missed the mark as they were not specific with their answers and just stated that the reason why waste water is filtered is to remove impurities, but did not clarify this with insoluble or solid. Many stated that the filtration was to remove bacteria, this was rejected.

In part (b)(iii) of question 6, candidates often stated again that the addition of chlorine was to remove impurities or simply stated that it was added to clean the water, both of which were not sufficient to score. Many thought that the chlorine was added to bleach the water.

A good range of marks were seen in question 6(c) with candidates approaching the question in a variety of ways. Those that looked at the values for both salts and used these to make a comparison as to which is best gained all three marks. Those that did not score often lost marks as they did not refer to the data given in the question.

The last question on the paper was the six-mark extended response question which proved hard for candidates. In general, those that did not score well, often did so as they described a range of different techniques not related to this experiment such as chromatography, crystallisation and filtration, regularly giving more than one of these in their answer. Of those that did score, some were able to give simple parts of the plan only, mentioning heating the water or just giving a test that would show the water is neutral. Detailed plans were not often seen. Those that scored in level 2 often did so as they gave a partial plan and then a way to prove that the water was neutral. Very few described the condenser. It was apparent that many candidates were not familiar with the common laboratory apparatus shown in the Figure and used labels 1-4 or A-D so that they could refer to them in their answer.