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Examiners' Report
June 2014

GCSE Chemistry 5CH1H 01

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June 2014

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Introduction

The Higher Tier paper assesses grades A* to D and consists of a mixture of question styles, including objective questions, short answer questions, data analysis questions and extended writing questions. There was evidence that candidates were well-prepared for the examination and many of them approached the questions with a good understanding of the topics and answered in detail.

This report will provide exemplification of candidates' work, together with tips and/or comments, for a selection of questions. The exemplification will come mainly from questions that required more complex responses from candidates.

Candidates who did well in this exam, did so because

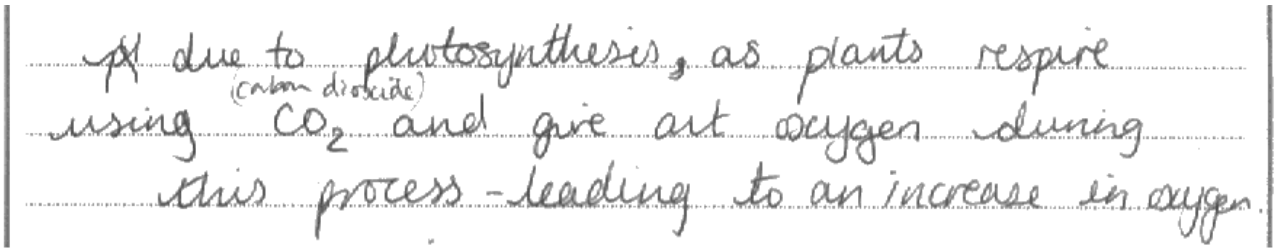
- they read the questions carefully and answered the questions as they were set were able to use their knowledge of chemistry and apply it to new situations.
- showed a good understanding of the chemistry behind the core practical's detailed in the specification.
- used correct scientific terminology.
- could analyse and use tables of data to construct graphs and draw conclusions from the graphs.
- could write correct formulae and balanced equations.

Less successful candidates:

- did not read the questions carefully and gave answers that were related to the topic being tested but did not answer the question or they answered questions that they thought that were there rather than the question that had been posed.
- could not accurately draw graphs.
- could not write correct formulae or made mistakes with the formatting of formulae such as subscripts and the correct use of cases.

Question 1 (b) (i)

This question was very well answered with the majority of candidates being able to state how the percentage of oxygen had increased due to plants photosynthesising. Where candidates lost marks it was because they confused plants respiring with plants photosynthesising or because they had read the question incorrectly and gave ways that the amount of carbon dioxide has decreased, such as dissolution in oceans.



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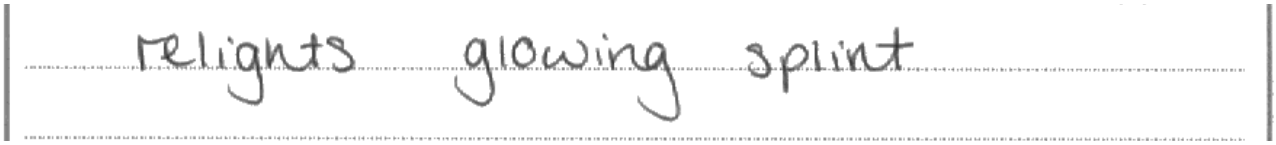
Examiner Comments

This candidate lost marks as they had included incorrect scientific terminology. If they had missed out the word respire, this would have been a sound 2 mark answer.

Question 1 (b) (ii)

Whilst the majority of candidates were able to describe correctly the test for oxygen, many are still stating that a 'blown out splint' should be used to test for oxygen. This is not correct and therefore lost both marks.



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Examiner Comments

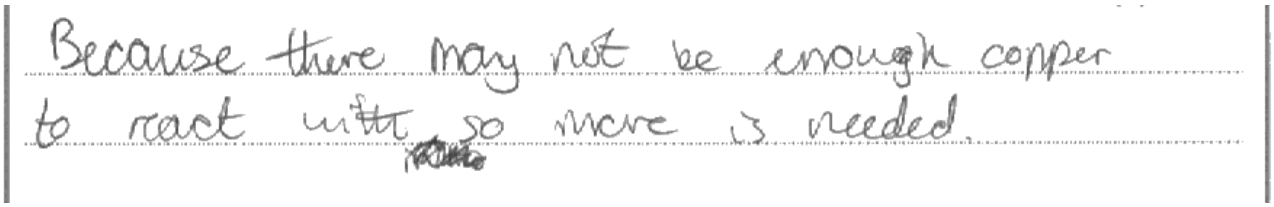
A concise response that gives both the test and the expected result for full marks.

ResultsPlus
Examiner Tip

It is important that when asked to describe the test for a gas, you give the test and the expected result of the test.

Question 1 (c) (i)

It was pleasing to see that many candidates understood that an excess of copper must be used so that all of the oxygen is used up. Some candidates lost a mark here as they were not precise with their terms which therefore made their answer incorrect. For example, stating that an excess of copper must be used so that all the 'air' was used up. Some candidates lost marks as they confused the term 'excess' and stated that all the copper had to be used up. Some stated that it was so that the reaction was complete which was insufficient for the mark.

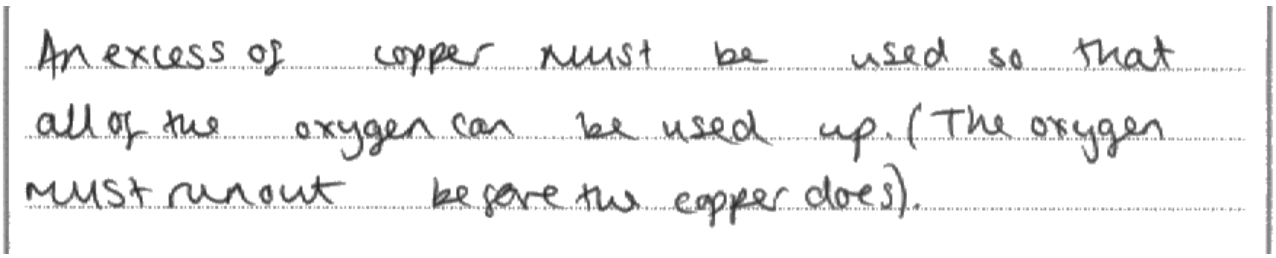


ResultsPlus
Examiner Comments

This candidate has not given enough detail in their answer. They understand that there may not be enough copper to react, but have not said with what or why?

ResultsPlus
Examiner Tip

It is important that your answers given are detailed so that you show your understanding of the chemistry of the question posed.

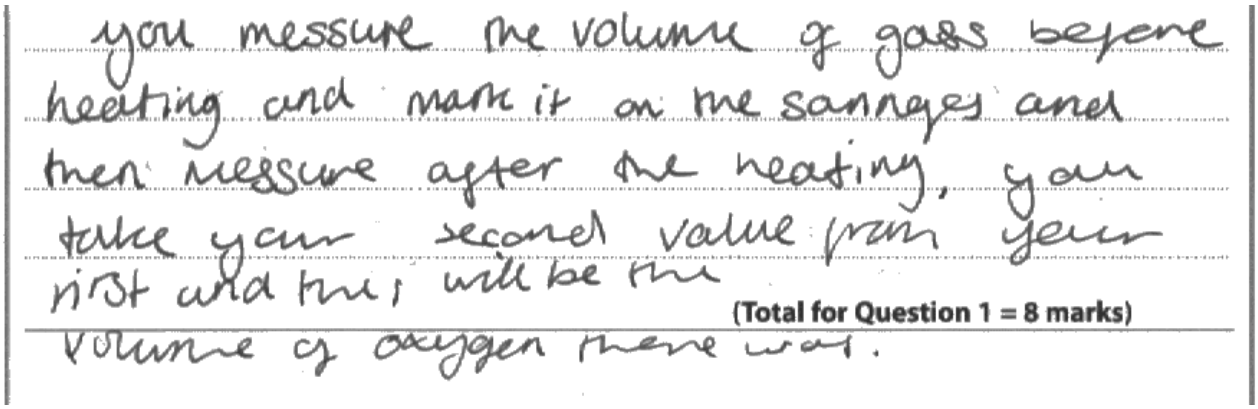


ResultsPlus
Examiner Comments

A good answer that shows that the candidate has seen or carried out the experiment and understands the chemistry behind it.

Question 1 (c) (ii)

Only the best candidates got this question correct. Candidates seemed to have very little idea that an experiment had been carried out and answered the question by giving a calculation but made no reference to how the numbers had been obtained. Many students misinterpreted the question and tried to explain the theory behind the experiment. Many candidates simply stated the expected percentage of oxygen in the air without showing exactly how this could be determined using the equipment.


you messure the volume of gass before heating and mark it on the sannges and then messure after the heating, you take your second value from your first and this will be the volume of oxygen there was.

(Total for Question 1 = 8 marks)

ResultsPlus
Examiner Comments

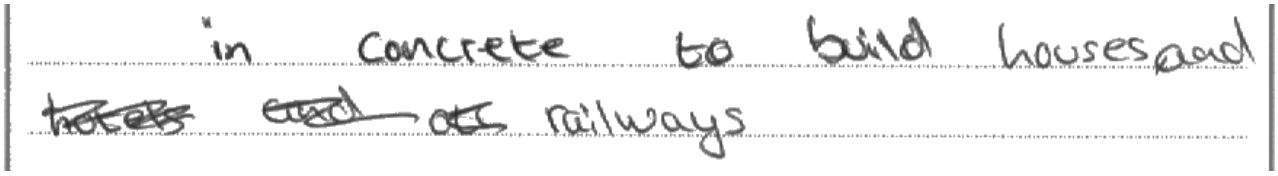
This is a good response and shows that the candidate has seen or carried out this experiment and understands the chemistry behind it.

ResultsPlus
Examiner Tip

It is very important that when you are shown an experiment or are carrying out an experiment that you understand the chemistry behind why you are doing it and what you are observing.

Question 2 (a) (ii)

This question tripped up many candidates. They were not precise in their answer, and although it was clear that they knew what the answer should be, marks could not be awarded as the answer given was incorrect. Many candidates stated that a large scale use of limestone was glass. However glass alone is not an acceptable response, limestone is used in the 'manufacture' of glass, not 'as' glass. Some candidates misread the question and stated that a large scale use of limestone is in quarries which is not worthy of credit.



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Examiner Comments

In this an example of a good response for this question, stating that limestone is used in cement. The words after e.g. to build houses and railways are not necessary but strengthens the answer further.

ResultsPlus
Examiner Comments

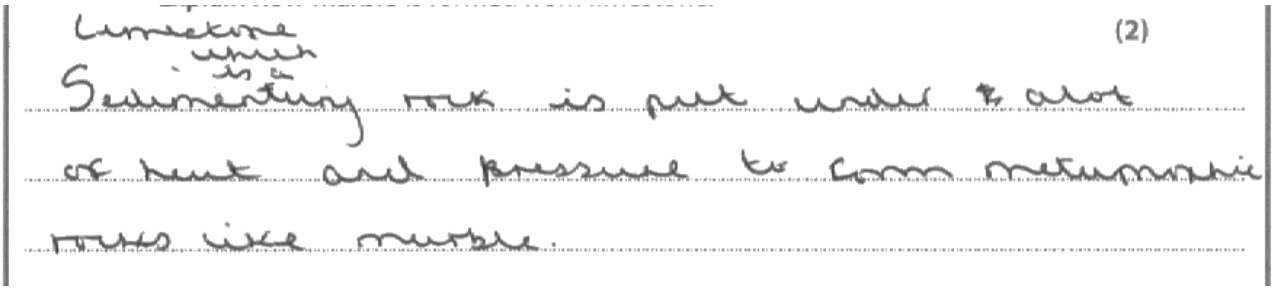
This is an example of a common response where the candidate has not been specific enough with their answer. Limestone is not cement, but is used in cement. This response scored 0 marks.

ResultsPlus
Examiner Tip

When asked for uses of materials, ensure that you are precise with your answer – answers such as buildings, glass, cement would not gain credit in this question. However answers such as building materials, manufacture of glass or manufacture of cement would. Similarly neutralising soils would not score, however neutralising acidic soils would.

Question 2 (a) (iii)

Candidates demonstrated a good understanding that heat and pressure are required to convert limestone into marble.

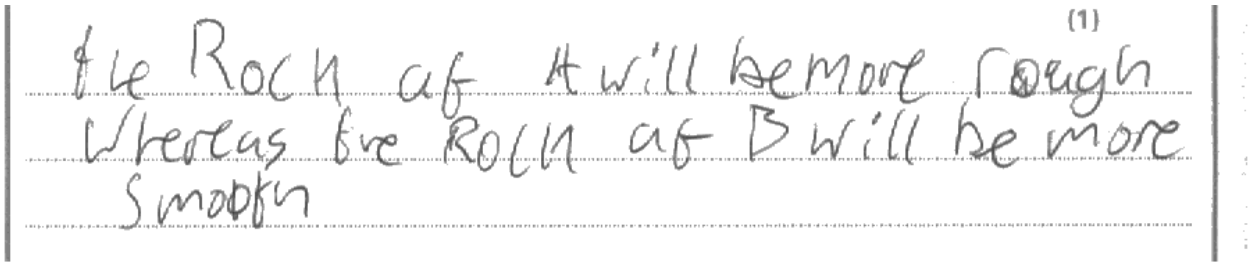


ResultsPlus
Examiner Comments

A good answer that scored the full 2 marks available.

Question 2 (b) (i)

The majority of candidates performed well in this question giving the correct answer that smaller crystals were formed at point A. Weaker candidates did not include the word "crystals" in their answer, saying that the rocks at A were smaller which did not gain credit.



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Examiner Comments

This candidate has not applied their knowledge of chemistry to the situation given.

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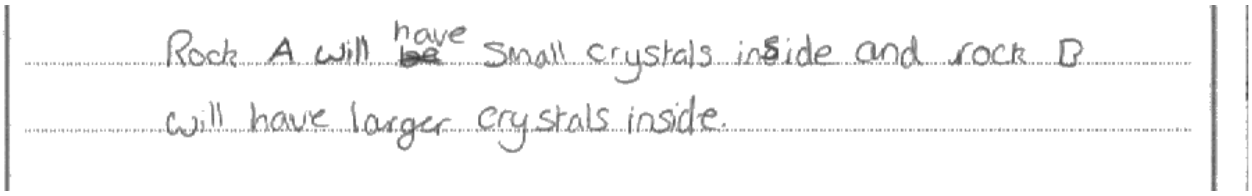
Examiner Tip

It is important that you apply the chemistry that you have learnt to the question that has been posed.



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Examiner Comments

A good answer that gained full credit.

Question 2 (b) (ii)

Many candidates got this question correct. Where candidates lost marks it was because they had discussed extrusive and intrusive cooling with no consideration as to how fast it happened.

A is cooled by the ~~the~~ cool earths surfaces

ResultsPlus
Examiner Comments

A poor response which gained no credit.

the magma at B would cool much more slowly than at point A. This is because it is still inside the Volcano whereas rock at A cools extrusively allowing the crystals to grow bigger.

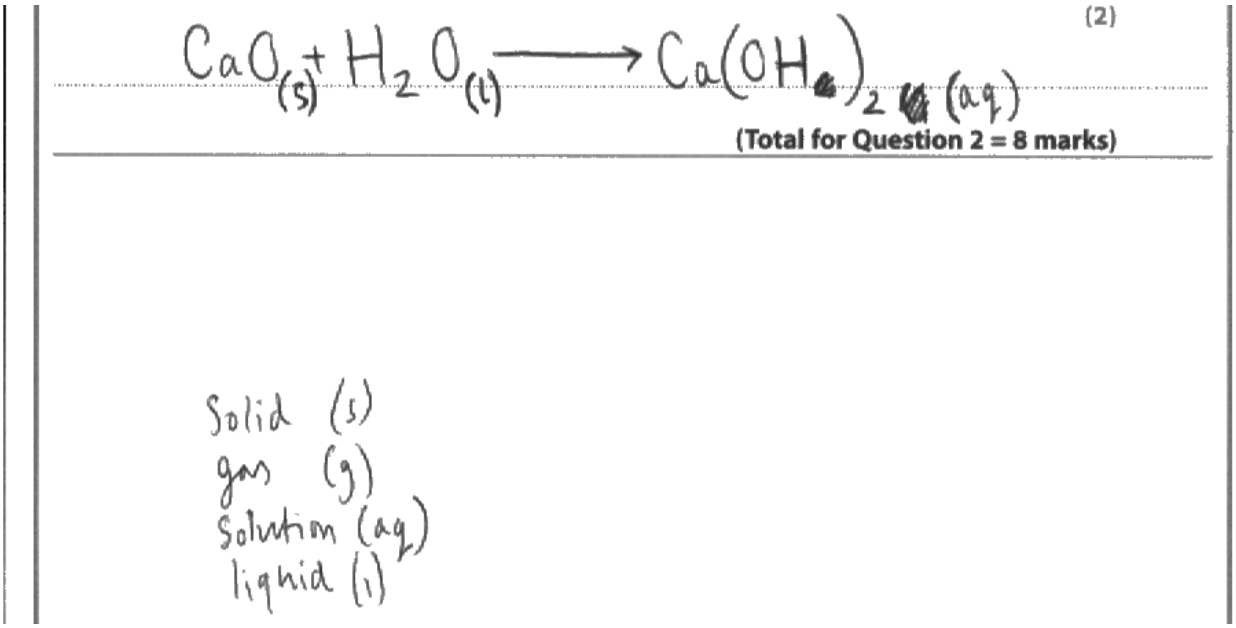
ResultsPlus
Examiner Comments

A very good answer that scored 1 mark.

Question 2 (c)

It was pleasing to see that many candidates were able to write the correct balanced equation for this reaction. It was clear that candidates have been taught how to balance equations with many showing their working below the answer line (although this was not given credit).

Where candidates lost marks it was due to poor writing of the formulae e.g. not using a subscript 2 in water. Many candidates could not recall the formulae of calcium hydroxide and tried to balance incorrect formulae.



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Examiner Comments

A fully correct equation that scored full marks. State symbols (although correct) were ignored as they were not asked for in the question.

ResultsPlus
Examiner Comments

This candidate scored one mark for the correct formulae on the left hand side of the equation.

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Examiner Tip

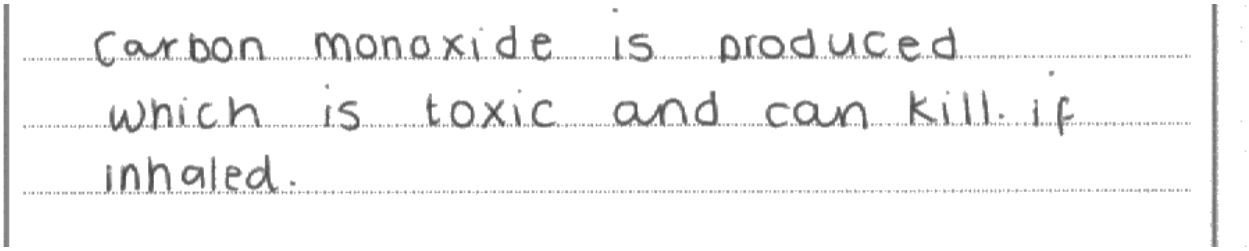
It is important that the formulae of substances named on the specification are learnt.

Question 3 (b)

Candidates showed a good knowledge of the waste products of incomplete combustion of a hydrocarbon, understanding the harmful effects of both carbon monoxide and carbon (in the form of soot). The most common answers referred to carbon monoxide being toxic or poisonous and often reference was made to its effect on preventing oxygen being carried by the blood.

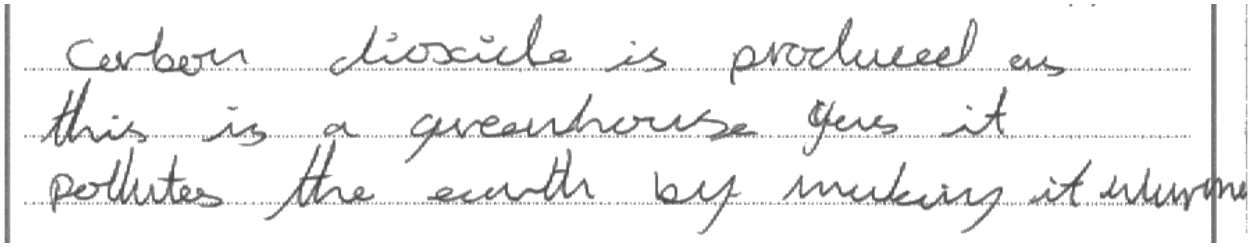
Some gave a detailed description of how carbon monoxide binds to haemoglobin.

Answers which stated problems created by carbon (soot) were less common, but those students who did refer to carbon (soot) generally understood that it caused respiratory problems, but few referred to soot making buildings look dirty or blocking chimneys. Where candidates lost marks it was because they thought that carbon dioxide was a product of the incomplete combustion of a hydrocarbon and went on to explain the effects of global warming.



ResultsPlus
Examiner Comments

A concise answer that scored the two marks available.



ResultsPlus
Examiner Comments

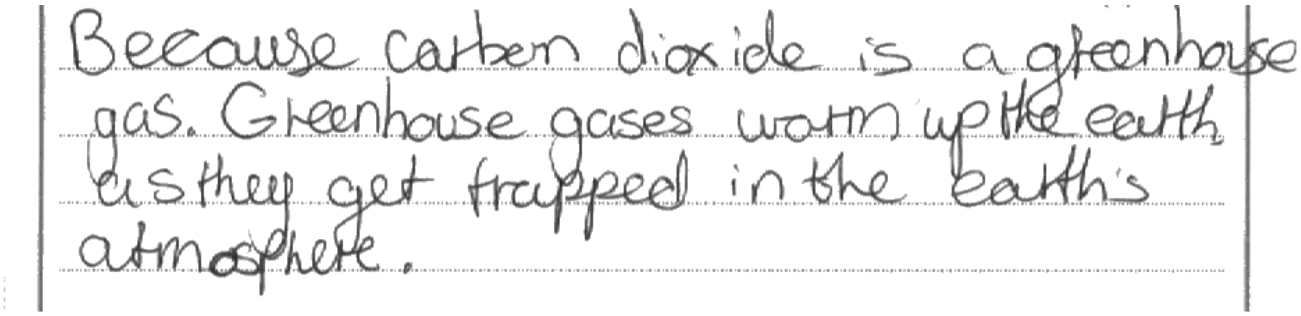
This candidate has read the question incorrectly and stated that carbon dioxide is produced and then gone on to give problems caused by the release of carbon dioxide.

ResultsPlus
Examiner Tip

It is important that when you have answered a question, you go back and read the question and answer together to check that the answer fits with the question posed.

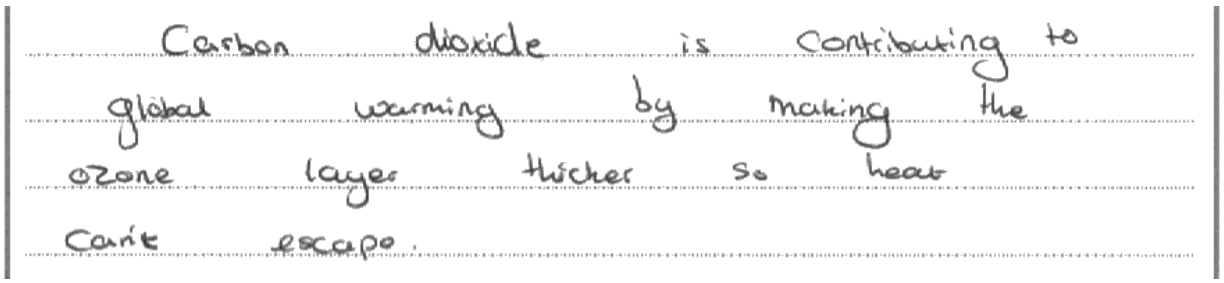
Question 3 (c) (i)

Many candidates were able to link ideas about carbon dioxide being a greenhouse gas and that the greenhouse gas may lead to global warming. Not many candidates could explain this in terms of the heat being trapped in the atmosphere. Candidates often lost marks as they stated that carbon dioxide has an effect on the ozone layer. Many candidates were able to give correct consequences of global warming, referring to the melting of ice-caps or rising sea levels.



ResultsPlus
Examiner Comments

One mark is awarded as the candidate understands that carbon dioxide is a greenhouse gas. The statement 'they' get trapped implies the gas, not heat, so does not score on this point. However they do go on to state that the Earth is warmed up, which is fine for the final marking point.

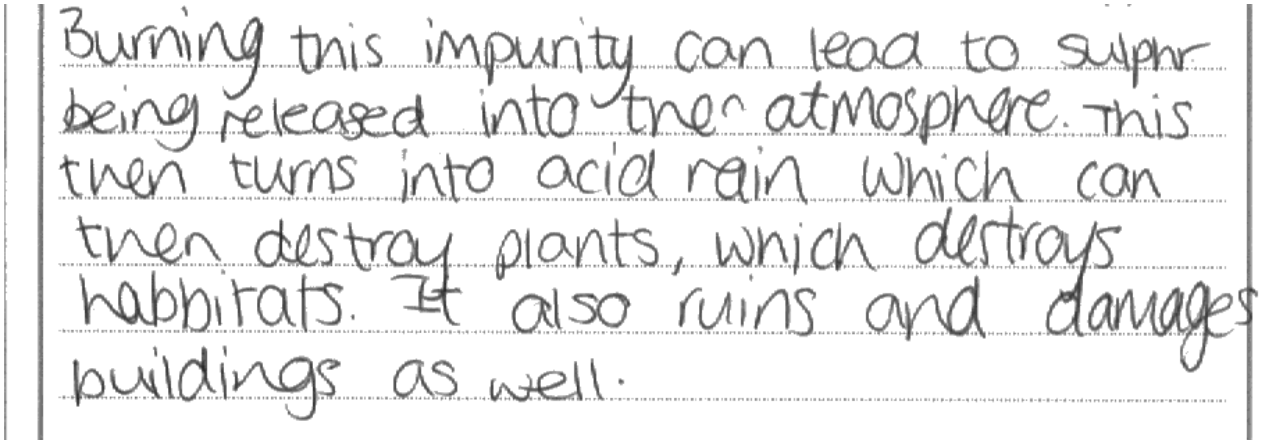


ResultsPlus
Examiner Comments

Global warming would gain credit in this question, but this is negated by the incorrect reference to the ozone layer.

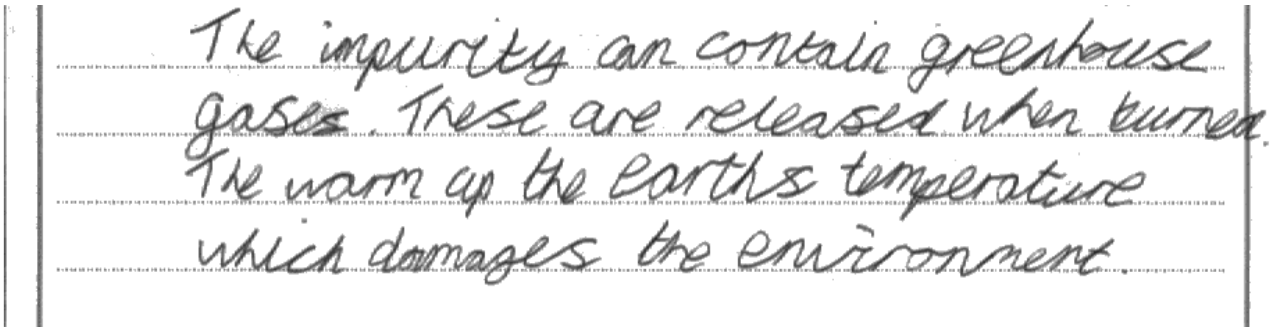
Question 3 (c) (ii)

Candidates lost marks in this question as they did not seem to understand that sulphur is first oxidised to sulphur dioxide before it is then dissolved into clouds/water/rain to form acid rain. However, the effects of acid rain were well described by the large majority.


Burning this impurity can lead to sulphr being released into the atmosphere. This then turns into acid rain which can then destray plants, which destroys habbitats. It also ruins and damages buildings as well.

ResultsPlus
Examiner Comments

There is no mark for sulfur forming acid rain as it is sulfur dioxide that reacts or dissolves to give acid rain, not sulfur. Although this mistake had been made, credit was still awarded for the harmful effects of acid rain given.


The impurity can contain greenhouse gases. These are released when burned. The warm up the earths temperature which damages the environment.

ResultsPlus
Examiner Comments

This candidate has not read the question carefully and goes on to describe the harmful effects of carbon dioxide rather than those of the sulfur impurities.

When sulfur is burnt the addition of oxygen creates sulfur dioxide. Sulfur dioxide is an acidic gas so if it's released from a fossil fuel power station it can dissolve into rainwater to make acid rain. Acid rain can cause soil and lakes to become acidic which then harms organisms living there. It can also cause weathering to buildings.

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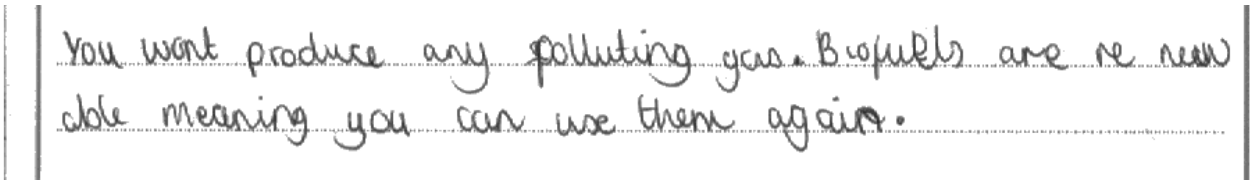
Examiner Comments

A very good answer that explains the chemistry of how burning sulfur impurities can cause problems in the environment. A full three marks are scored.

Question 3 (d)

Most students understood that a key advantage of biofuels is that they are renewable sources of energy, but fewer that biofuels are obtained from plants. A common error was that students thought that biofuels, rather than the crops from which they are made, could be grown. There was confusion with the terms 'reusable' with 'renewable' with many thinking that biofuels can be reused, which is incorrect.

Many candidates stated that biofuels are carbon neutral with no explanation of what this meant so gained no credit. Candidates who explained what was meant by carbon neutrality in terms of photosynthesis or plants removing carbon dioxide from the atmosphere to compensate for any carbon dioxide released in their production/combustion did gain credit. A common misconception seen was that less or no carbon dioxide or harmful gases are produced.



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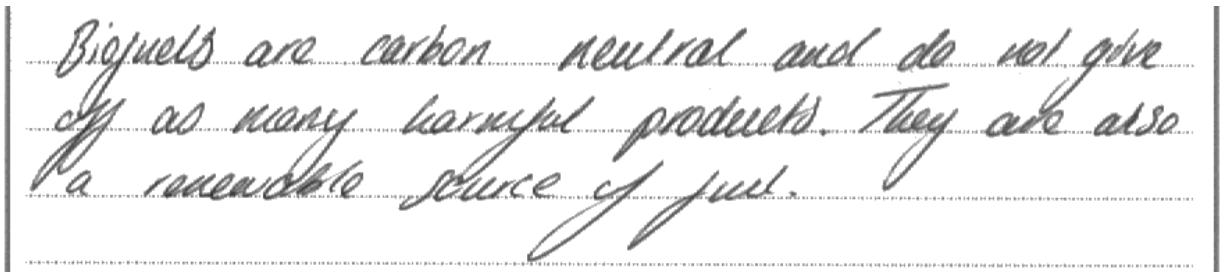
Examiner Comments

A common misconception is that biofuels produce no polluting gases and that biofuels can be reused. Although the candidate has stated that the biofuel is renewable, this is negated by the definition of renewable given, that they can be used again.



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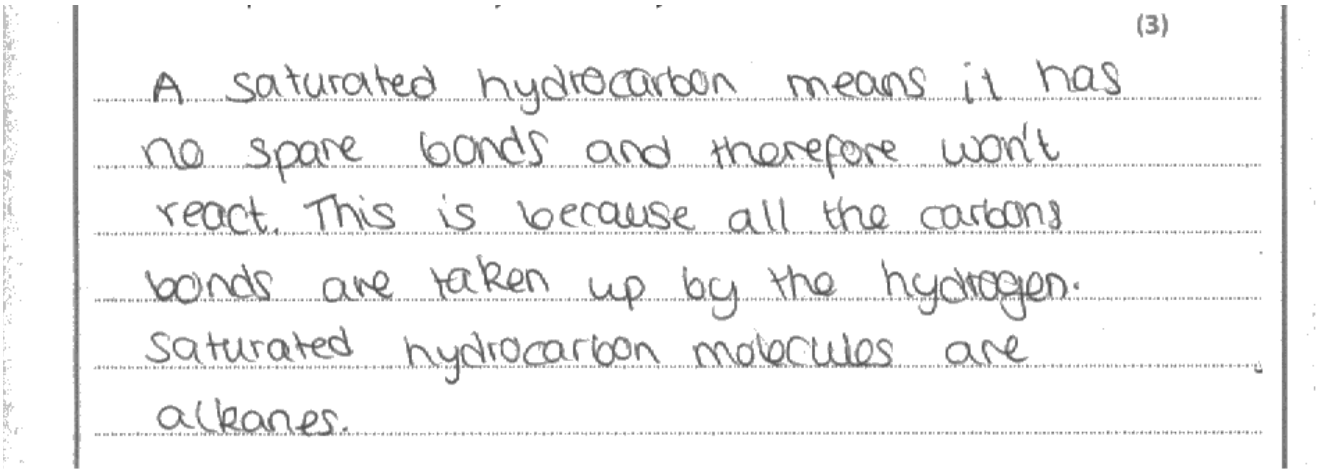
Examiner Comments

This response scored one mark for stating that biofuels are renewable. The reference to carbon neutral was too vague to warrant a mark.

Question 4 (a) (i)

Many candidates were able to explain that octane contained only hydrogen and carbon atoms. Fewer candidates were able to explain what is meant by unsaturated with many losing marks as they used vague terms such as 'spare bonds'. Another weak answer was to say that octane has a single bond. This is unacceptable as unsaturated hydrocarbons also contain single bonds and it is the fact that the saturated hydrocarbon contains ALL single bonds or NO double bonds that is important. Another unacceptable response seen often was that the unsaturated hydrocarbon would not react or could not have anything else added to it. Many candidates included references to the bromine water test and its results, which whilst correct it was not asked for in the question and so therefore was not given credit.



(3)

A saturated hydrocarbon means it has no spare bonds and therefore won't react. This is because all the carbons bonds are taken up by the hydrogen. Saturated hydrocarbon molecules are alkanes.

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Examiner Comments

There is no credit for using the term spare bond.

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Examiner Tip

You must be careful not to use non-scientific terms when explaining ideas in your exam. No 'spare bonds' is not an acceptable alternative to 'no double bonds' and will not gain credit.

Saturated hydrocarbons only have singu bonds between atoms meaning that you can't add any more atoms to the molecule because each atom has already bonded to gain a full outer shell.

ResultsPlus
Examiner Comments

This response has given a good explanation of unsaturated for one mark. Sadly the candidate has not gone on to describe what is meant by hydrocarbon so gained no credit for this part.

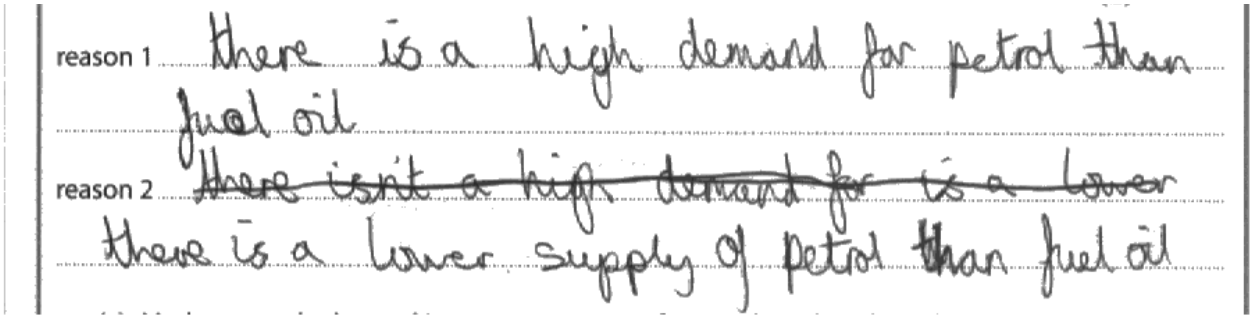
ResultsPlus
Examiner Tip

This question was generally well answered, although too many candidates thought that the process was thermal decomposition rather than cracking.

Question 4 (b) (ii)

Students overall demonstrated their knowledge of the high demand there is for petrol and often understood that cracking fuel oil helps to meet the supply need or overcome the shortage of petrol. Others stated that petrol or shorter chains/molecules are more useful than fuel oil or that there was a surplus of fuel oil, some of which could be put to good use through cracking into petrol.

Some candidates lost marks as they wrote about oil being 'useless' rather than less useful.



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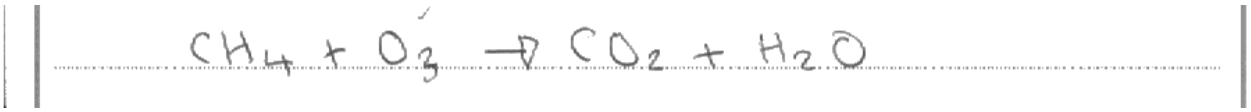
Examiner Comments

Both marks were scored here for high demand of petrol and low supply.

Question 4 (c)

As with the previous equation, it was pleasing to see that candidates seemed to have a much better understanding of how to balance the equations than in previous sessions. A large majority of students were able to give the correct formulae of the products of combustion of methane, but fewer were able to give the correct formula of methane with 'Me' often appearing on the left hand side of the equation in place of CH_4. Some students did not show oxygen as diatomic. As a result of these errors, some candidates were unable to provide the balanced equation necessary to score maximum marks. Other common errors seen, were the appearance of lower case letters e.g. h_2O or H_{20} for H_2O.



ResultsPlus
Examiner Comments

This candidate scored one mark for the correct products of the complete combustion. However, even though the formula for methane is correct, no mark was scored for reactants due to the incorrect formula for oxygen.

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Examiner Tip

It is important to practice the key formula of the elements and compounds in the specification. You must remember than you cannot change the formula of a molecule in an attempt to balance the equation.

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Examiner Comments

The formula on both the left hand side and right hand side are correct, although not in its lowest form, the balancing is correct and the equation scores full marks.

Question 5 (a)

Many candidates scored here as they knew that magnesium nitrate was one of the products of the reaction. However a minority of candidates could also state that water and carbon dioxide were also formed.

Some incorrectly gave salt instead of magnesium nitrate.

More students gave only gave one additional product so failed to gain full credit.

ResultsPlus
Examiner Comments

A good answer that scored both marks.

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Examiner Comments

This candidate gave just the generic answer to the question and did not link their knowledge to the question posed.

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Examiner Tip

Remember to link your knowledge of chemistry to the context given in the question.

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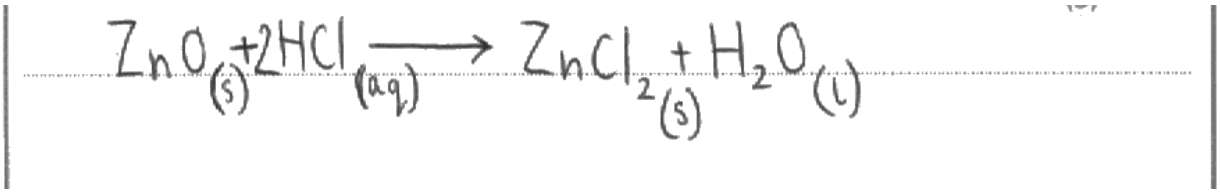
Examiner Comments

This response gained one mark for showing an understanding that magnesium nitrate and one other product (carbon dioxide) was produced, full credit was not awarded as they did not state that water was also produced.

Question 5 (b) (ii)

Again, students showed a better understanding of how to balance equations than in previous sessions. Many students gained credit for their knowledge of correct formulae of either the product or reactants or both. Many provided a correct balanced equation as a result.



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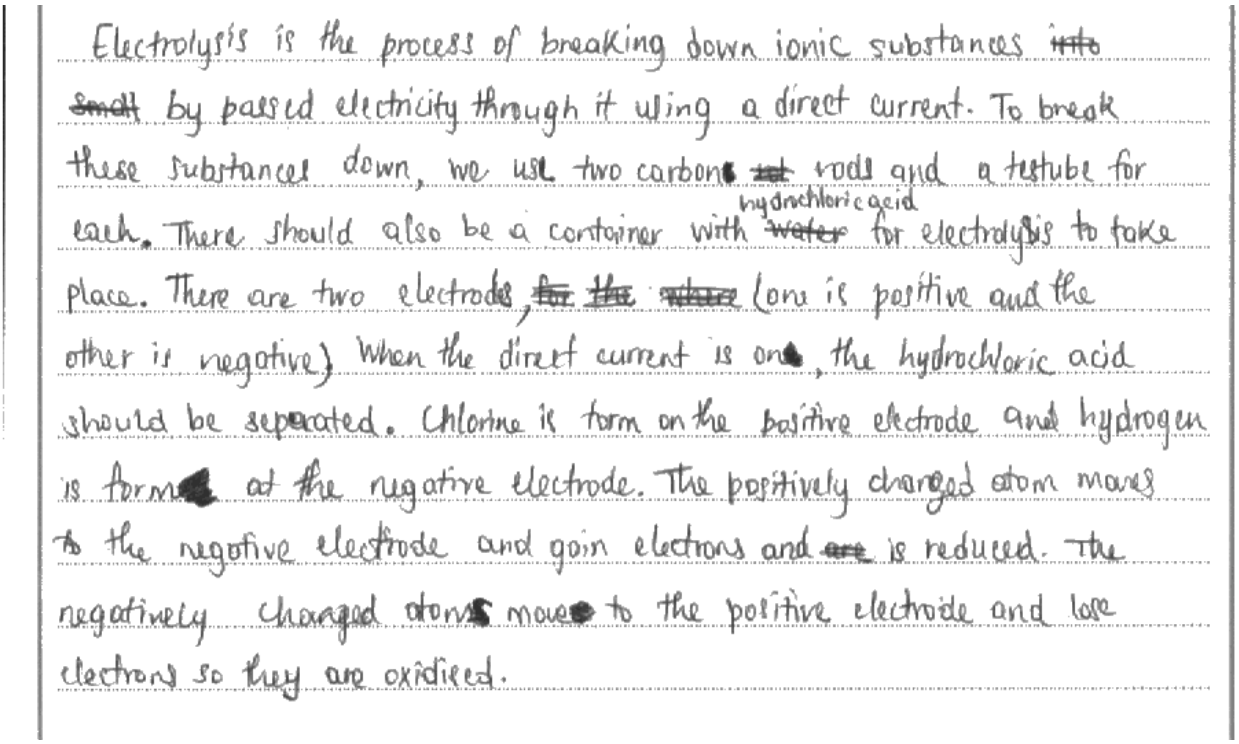
Examiner Comments

An excellent answer which scored full credit, state symbols were not asked for and so were ignored.

Question 5 (c)

It was pleasing to see that the majority of candidates were familiar with this practical and had obviously carried it out, or at the very least seen it, as some very good explanations and diagrams were seen. However, many candidates lost marks as they did not fully address the question posed. Some candidates gave a fantastic description of how to set up the equipment including a detailed diagram but then failed to explain how they would test for each of the gases produced. Others gave an excellent description of how to test for the gases, including good detail such as damp blue litmus turning red before bleaching, instead of just stating litmus paper turned white, but then failed to describe how the experiment could be carried out. Some candidates gave incorrect methods for the tests such as using a glowing splint instead of a lit splint to test for hydrogen and some just stated that the squeaky pop test should be used, which did not gain credit.


Electrolysis is the process of breaking down ionic substances ~~into~~ ~~small~~ by passed electricity through it using a direct current. To break these substances down, we use two carbon ~~rod~~ rods and a testube for each. There should also be a container with ~~water~~ hydrochloric acid for electrolysis to take place. There are two electrodes, ~~for~~ ~~the~~ ~~where~~ (one is positive and the other is negative) When the direct current is on, the hydrochloric acid should be seperated. Chlorine is form on the positive electrode and hydrogen is formed at the negative electrode. The positively charged atom moves to the negative electrode and gain electrons and ~~are~~ is reduced. The negatively charged atoms moves to the positive electrode and lose electrons so they are oxidised.

ResultsPlus
Examiner Comments

In this response, the candidate has given a good description of how the apparatus can be used to electrolyse the hydrochloric acid. However they have not fully addressed the question as they are also asked how the gases produced can be tested, and this has not been covered in the answer.

ResultsPlus
Examiner Tip

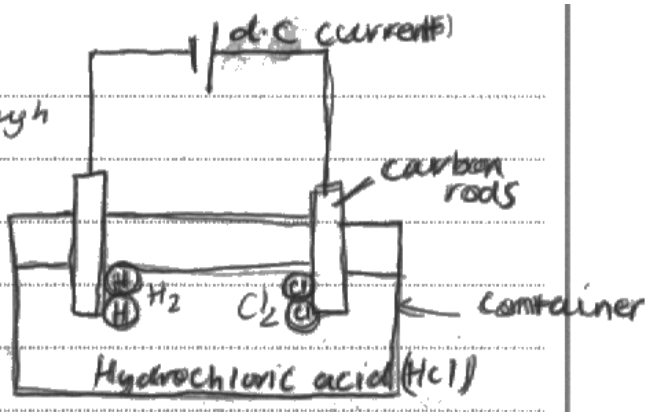
It is important that you address all parts of the question posed. Always re-read the question, followed by your answer to check that your answer is relevant to the question posed and that you have addressed all the appropriate points.

Pour the hydrochloric acid into the container + put it on a flat surface. Put the two carbon rods into the container held steady by a clampstad or something sturdy. Connect the electricity to the rods and watch the reaction. One is a negative rod + the other is positive. The hydrogen + chlorine will go to the opposite charged rod. The hydrogen^{+} will go to the negative rod and the chlorine^{-} will go to the positive. Then put some indicator in the acid and the hydrogen + chlorine will change colour if they are acidic or alkali.

ResultsPlus
Examiner Comments

This candidate has given a description of how the apparatus can be used to electrolyse the hydrochloric acid which gains credit. However the tests for hydrogen and chlorine are incorrect so do not gain credit.

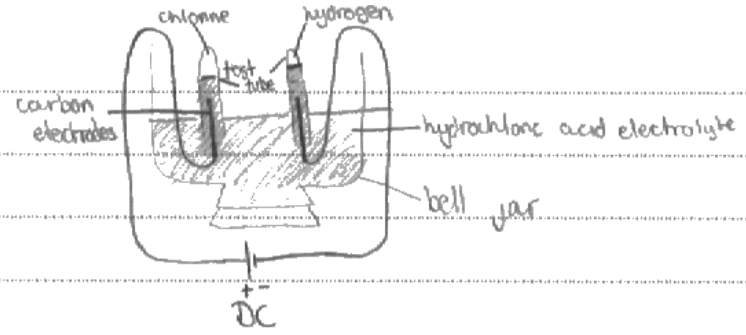
a ~~d.c~~ direct current can be used and passed through two carbon rods for the electrodes. If the hydrochloric acid is the electrolyte, it will be split up by electricity into hydrogen gas (H_2) and chlorine gas (Cl_2) these can then be collected in test tubes. The test for hydrogen is that a glowing splint in a test tube of hydrogen will create a ~~squeaky~~ "squeaky pop". The test for chlorine is that it will bleach damp litmus paper from blue to white.



ResultsPlus
Examiner Comments

This candidate gives a good description of how to carry out the experiment. The diagram is useful and helps inform the candidate's answer. The response then goes on to describe the tests, chlorine is described correctly and gains credit. Because of the error in the description of the test (glowing splint) for the hydrogen test, credit could not be gained for this part of the answer.

(6)



ELECTROLYSIS:

In the process of electrolysis, a direct current is passed through an electrolyte to decompose it the electrolyte, via two carbon electrodes. Hydrogen is produced at the cathode & chlorine at the anode, as collected in the test tubes.

To test for chlorine you would hold damp blue litmus paper over the test tube: which will turn red then white in the presence of chlorine, as it is bleached.

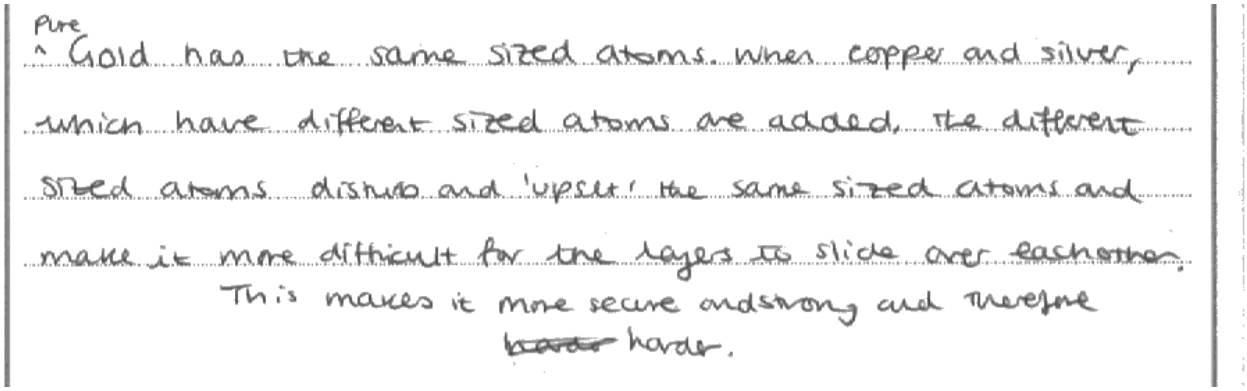
To test for hydrogen, hold a lit splint over the test tube & if you hear a squeaky pop, then hydrogen is present.

ResultsPlus
Examiner Comments

A very good answer that scored the full six marks available.

Question 6 (b) (i)

Students demonstrated a good understanding of why a gold alloy is stronger than the pure metal gold. The reference to different sized atoms within an alloy either disrupting the structure/layers or preventing the layers/atoms moving was well understood. Likewise many students showed their understanding that as all the atoms in gold are the same size, this meant that the atoms/layers could slide over each other easily, hence making it softer. A minority referred to 'molecules' instead of 'atoms'. Some candidates made their points clear by drawing diagrams of atoms in the pure metal and the alloy.


Pure
^ Gold has the same sized atoms. When copper and silver, which have different sized atoms are added, the different sized atoms disrupt and 'upset' the same sized atoms and make it more difficult for the layers to slide over eachother. This makes it more secure and strong and therefore ~~harder~~ harder.

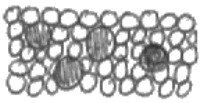
ResultsPlus
Examiner Comments

A good answer that scored the full 2 marks available.

ResultsPlus
Examiner Tip

There would be credit for stating that there are different sized atoms in the alloy and for that the atoms cannot slide. However, the candidate has been lax with their use of scientific vocabulary by stating that molecules instead of atoms are different sizes in the first part of the answer so full credit cannot be awarded.

Gold alloys are stronger than pure gold because in copper or silver molecules are different sizes to gold molecules so when they are put together the atoms cannot slide over eachother, making them stronger.

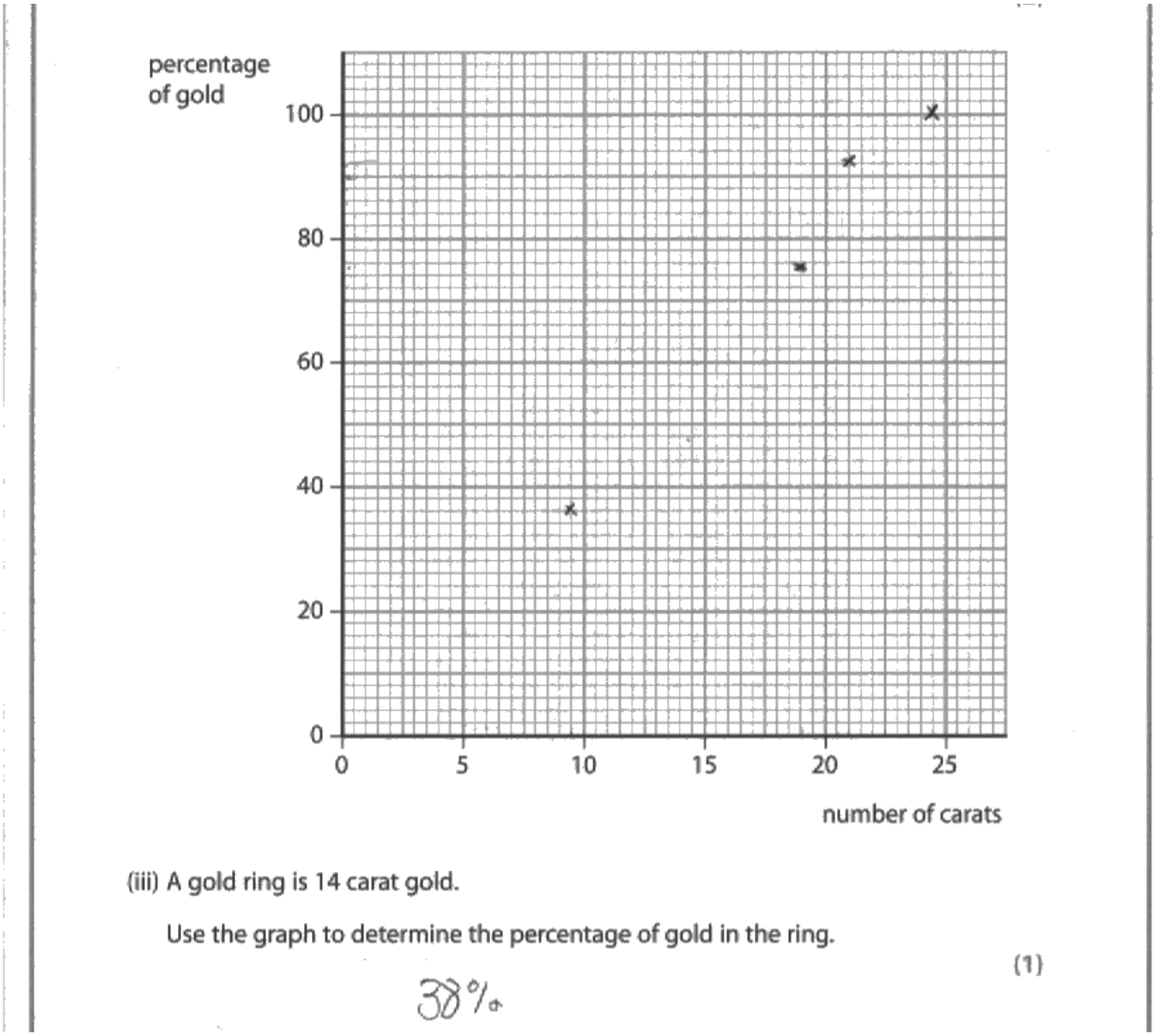


ResultsPlus
Examiner Comments

It is very important that you use scientific terminology correctly and that terms such as molecules, ions and atoms are used in the correct context, as the use of the wrong term can make your, otherwise correct answer, no longer valid.

Question 6 (b) (ii-iii)

The majority of candidates were able to plot points accurately, construct a line that best fitted the points drawn and extrapolate to find the percentage of gold in a 14 carat ring. However some students lost marks as they drew a line of best fit from plot to plot or drew a very scruffy line of best fit.



(iii) A gold ring is 14 carat gold.

Use the graph to determine the percentage of gold in the ring.

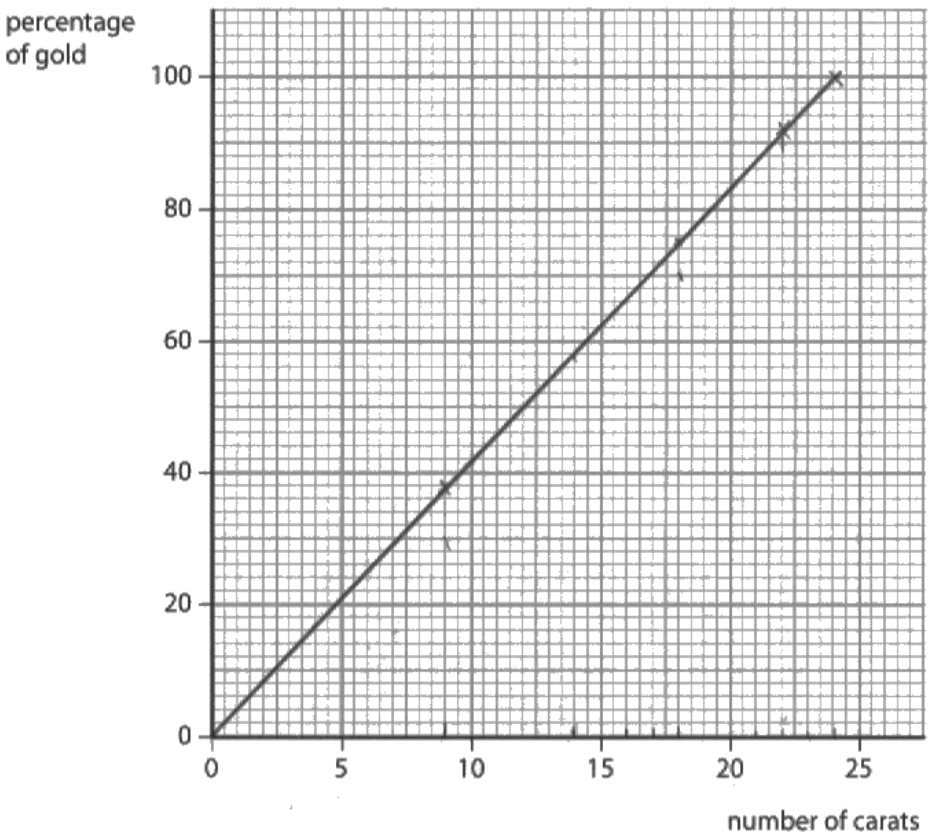
(1)

38%

ResultsPlus
Examiner Comments

This response scored no marks. There has been an attempt to plot the data. However one of the points was more than 1 small square away from the correct point. No line of best fit has been drawn.

The percentage of gold in the ring is incorrect.



(iii) A gold ring is 14 carat gold.

Use the graph to determine the percentage of gold in the ring.

(1)

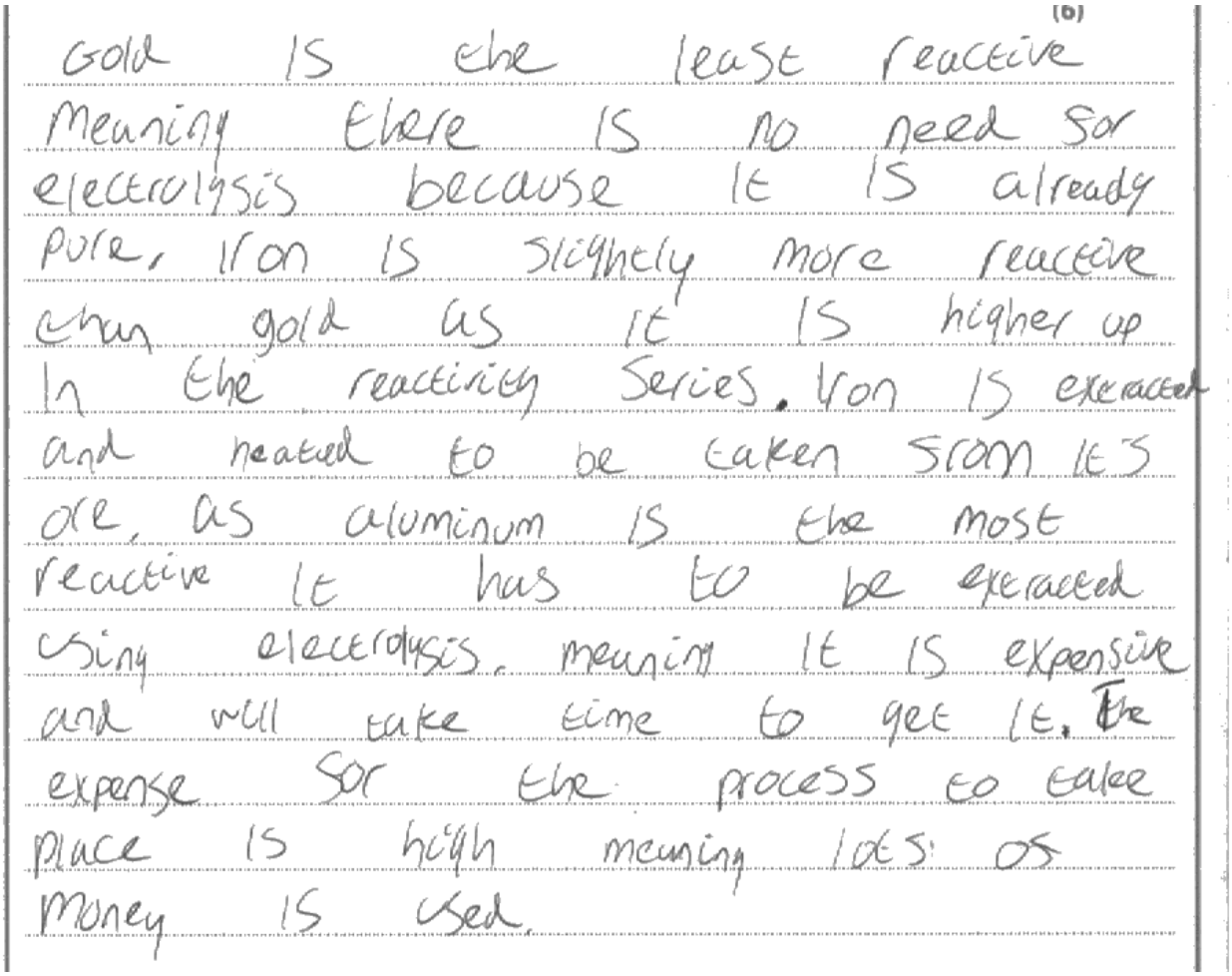
58%

ResultsPlus
Examiner Comments

A good answer that scored full marks for plotting the correct points and drawing a clean line of best fit. The percentage of gold was correctly obtained from the graph.

Question 6 (c)

Candidates that did well in this question did so as they had a good understanding of the processes involved and the chemistry behind the methods of extraction. They ensured that all areas of the question that had been posed were addressed. Candidates that did less well, either were let down by their weak understanding of the chemistry, for example they were able to state the three methods of extraction but they were not able to relate this to the reactivity of the metals. Or, in some cases, they did not fully address the question and left key areas out. In some cases very generic answers were given and because the detail was lacking marks could not be awarded. Although not required, the best candidates gave very thorough answers, that included correct symbol equations for the reactions taking place.



(b)

Gold is the least reactive meaning there is no need for electrolysis because it is already pure, iron is slightly more reactive than gold as it is higher up in the reactivity series. Iron is extracted and heated to be taken from its ore, as aluminum is the most reactive it has to be extracted using electrolysis. meaning it is expensive and will take time to get it. The expense for the process to take place is high meaning lots of money is used.

ResultsPlus
Examiner Comments

This response gives an explanation of how aluminium and gold are extracted and relates this to their position in the reactivity series. This candidate has also given some explanation in terms of cost for aluminium however they have made no reference to how iron is obtained.

ResultsPlus
Examiner Tip

Ensure that when you make statements in these six mark questions, you back them up with the chemistry. Once you have written your answer go back and check that you answer fully addresses the question posed.

(6)

If an element is higher than carbon in the series, then it is extracted using electrolysis. these are the most reactive elements, including aluminium. this is because if the element is more ~~attracted to~~ reactive // to carbon, then it wont work. large scale electrolysis is expensive as generating ~~electrolysis~~ electricity requires the burning of fossil fuels or using hydrocarbons. If an element is lower than carbon in the reactivity series, then it is heated with carbon in a blast furnace. this is for example iron to remove the oxygen from the ore by the process of reduction. this method of extraction is also expensive because the powering of a blast furnace requires fuel which will most likely be fossil fuels. However, // if the element is on the bottom of the reactivity series, then it doesn't need to be extracted at all. one example is gold. this is because it is naturally found in the earth by itself, as pure metal. this is because it isn't reactive enough to bond with oxygen. Extracting ~~oxygen~~ gold would therefore be very cheap as it does not need to be extracted. // An ore is how a metal found in the Earth. It is usually combined with oxygen which is why it's important to extract it to get the pure metal.

(Total for Question 6 = 12 marks)

ResultsPlus
Examiner Comments

This response gives an explanation of how each metal is extracted. The methods of extraction are then justified in terms of the metals position in the reactivity series. There is also some reference to the cost of each method of extraction, a sound 6 mark answer.

Aluminium does not have to be extracted from its ore using electrolysis because it is of high reactivity it can be heated with carbon to be extracted whereas iron and gold need to be exoacted using electrolysis because of lower reactivity they are more difficult to extract. it is more expensive to extract iron or gold than it is to extract aluminium.

ResultsPlus

Examiner Comments

There is no correct indication of how any of the metals can be extracted so therefore no marks can be awarded, even though relative reactivity has been mentioned. The reference to cost is also incorrect.

The reactivity Series determinds whether the metal can be extracted by electrolysis or by heating the ore with carbon. If in the reactivity series it is above carbon, ~~there~~ such as aliminium & gold, then it is extracted using electrolysis, if ~~or~~ it is below carbon such as gold, ~~etc~~ it is extracted via heat. Aliminium is at the top of the reaction series & is also one of the most ~~expensive metals to get~~ cost effective metals to obtain. Gold however, is very expensive as electrolysis is required which is an expensive ~~pro~~ process. This is also why many pieces of gold jewelry are just plated.

ResultsPlus
Examiner Comments

This response has given a correct method of extraction for aluminium, however it has coupled this with gold which in incorrect. There is no reference to how iron is obtained.

Paper Summary

Based in their performance in this paper candidates are offered the following advice:

- read the questions very carefully.
- make sure you answer the question actually set, not a similar one you have practiced from a past paper.
- be selective about the information you include in your answers.
- practice writing concise answers to the extended writing questions.
- practice writing formulae and balancing equations.
- ensure you can understand and use scientific vocabulary correctly.

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:

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