



Pearson  
Edexcel

Examiners' Report

Principal Examiner Feedback

November 2021

Pearson Edexcel GCSE Combined Science  
(1SC0) Paper 2CF

## **Edexcel and BTEC Qualifications**

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at [www.edexcel.com](http://www.edexcel.com) or [www.btec.co.uk](http://www.btec.co.uk). Alternatively, you can get in touch with us using the details on our contact us page at [www.edexcel.com/contactus](http://www.edexcel.com/contactus).

## **Pearson: helping people progress, everywhere**

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: [www.pearson.com/uk](http://www.pearson.com/uk)

November 2021

Publications Code xxxxxxxx\*

All the material in this publication is copyright

© Pearson Education Ltd 2021

The candidates for this paper were a small and unrepresentative subset and the comments reflect the responses of this cohort.

#### **Question 1a**

In such a question candidates should focus on the information given, and say how the (in this case) acid and magnesium could be kept the same. Many mentioned variables that were already stated as fixed in the method – for example, the volume of the sulfuric acid.

#### **Question 1c**

Surprisingly few candidates mentioned that the magnesium would no longer be seen, but more mentioned the ceasing of effervescence.

#### **Question 1d**

Candidates answered this question reasonably well, with most correct answers mentioning the particles having more energy. Some ignored the “in terms of particles” and just stated that reactions were faster at a higher temperature.

#### **Question 1e**

Many candidates did not understand that rate was amount / time.

#### **Question 2ai**

The knowledge of a full outer shell was reasonably well known.

#### **Question 2aii**

The question was carefully expressed as “why hydrogen and why krypton”, requiring separate reasons for each gas. Many answers just copied out the information in the table with no interpretation. The key point that krypton was more dense than air was almost never mentioned.

#### **Question 2b**

Some candidates were aware that these gases had not been discovered but others felt that as they were unreactive Mendeleev did not know where to place the gases.

#### **Question 2c**

Most candidates who carefully drew their bars scored marks. Surprisingly, quite a few candidates gave a positive value for the boiling point – it appeared that they had looked at the figures and produced a reasonable number (around 120) but did not write or did not understand negative numbers.

#### **Question 3a**

Candidates scored well on parts i and ii.

#### **Question 3b**

This is a very routine calculation but it was beyond almost all of the candidates.

#### **Question 3c**

Almost no candidates could use the diagrams they help them explain this pattern. Some talked about chlorine having more electrons, but not mentioning the key fact about the number of shells.

#### **Question 4ai**

The word equation was surprisingly badly done – missing a product, adding a reactant, inventing new products were all common.

#### **Question 4aii**

This part was well done.

#### **Question 4b**

This easy question was poorly done, with many responses concerning the test for hydrogen.

#### **Question 4c**

Quite a few candidates managed to put a shared pair of electrons to make a bond. Candidates are advised to use dots and crosses (rather than just one symbol) which makes it much easier to understand their answer.

#### **Question 4di**

Many meaningless answers were given here (e.g. hydrogen peroxide with and without liver). Of the (small) subset that mentioned time, unfortunately not all of them gave the unit.

#### **Question 4dii**

Many candidates described the lines – the volume goes up and then stops – without interpreting at all what this showed about the two reactions.

#### **Question 4diii**

This question was very poorly answered. Only a few mentioned anything that could collect and measure a gas volume, and none mentioned how this could be connected to the test tube. A labelled diagram may have helped candidates to show what they were trying to explain.

#### **Question 5a**

As the candidates were given the formula, 0.04625 was quite a common answer, however very few correctly converted the volume to  $\text{dm}^3$ .

#### **Question 5b**

There were very few correct reaction profiles and the responses to part i showed that candidates did not grasp what the profile showed. In particular, the energy axis was not understood.

#### **Question 5c**

Most candidates understood that the difference was about the ability of the substances to conduct electricity. Many fewer could explain this – the fact that the movement of ions is an electrical current is a difficult concept for the candidates. Most made no meaningful explanation, but some who tried thought of the electricity as a separate thing that either could or could not get through a substance.

#### **Question 5dii**

In such questions, candidates must give apparatus that one could expect to be used in a school laboratory setting – so answers such as gas masks are not accepted. Many placed great faith in safety glasses, and even gloves to avoid toxic gases.

#### **Question 6c**

The formula of nitrogen dioxide was very often wrong, meaning that this equation could not be balanced.

#### **Question 6d**

It was evident from this question that candidates did not know how greenhouse gases cause global warming. There was a lot of irrelevant material about the effects of greenhouse gases, but little of use about the causes.

#### **Question 6e**

In answering extended writing questions, candidates should read and split down the question several times. “Explain how acid rain is formed.....and the harm it can do”. Candidates made almost no relevant points about the first part of the question – with very few mentioning sulfur dioxide and/or sulfurous acid and/or sulfuric acid. Most focussed only on the effects of acid rain, but carefully hid the odd scientifically correct fact amongst a lot of generalised, vague, environmental language.