Pearson Edexcel

Examiners' Report
Principal Examiner Feedback

November 2020

Pearson Edexcel Combined GCSE

In Chemistry (1SC0) Paper 1CH

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Principal Examiner's report on Combined Science 1SC0 Paper 1CH

This paper was the first of two Chemistry papers taken by Combined Science higher tier students in November 2020. Some questions were also part of the foundation tier.

Question 1

Q1a(i) The test for hydrogen was well described by most, although candidates should be advised to properly learn the name 'splint' and the fact that to work, the splint must be lighted.

Q1(a)(iii) Almost all answers identified electricity as being needed for electrolysis. Fewer candidates were able to say clearly what the electricity did. The best candidates said that ionic compounds were decomposed by electricity.

Q1b This calculation was generally well attempted. Some candidates lost a mark by failing to convert the volume to dm^3. Others calculated 28.4/250, and then multiplied by 1000, but prematurely or incorrectly rounded the first step to get an incorrect final answer. Candidates should be advised to write on their answer paper the intermediate answers, keeping them in their calculator and only rounding at the final answer stage..

Question 2

Q2a(i) Most candidates wrote correctly the formula for copper(II) sulfate, but quite a few could not write the formula for sulfuric acid.

Q2b Not all candidates appeared to have read this question. Those that did most commonly mentioned that the effervescence would cease, and a pleasing number said that some copper carbonate would remain (although it is not correct to call this a precipitate).

Q2c Only a minority of candidates were able to draw a correct double bond (most used only single bonds) for carbon dioxide even though this is one of the molecules in the specification.

Question 3

Q3ai The quality of the diagrams drawn was very poor indeed. Many failed to show a filter funnel at all, with the filter paper simply put into the top of the receiving vessel. Marks were also lost by failing to fully label the diagram and closing off the top/bottom of the filter funnel.

Q3aii This was a variably answered question. Too many answers simply heated the filtrate to dryness rather than concentrating the solution then cooling to allow crystallisation. Many answers also failed to explain how the crystals would be collected and/or dried.

Q3b(i) This question required careful use of the ruler to measure the distance from the start line to the centre of the spot common to X and Z. The candidates should note that the spot shown on the start line has the start line running through the centre, so that is to where the measurement should go.

Q3b(ii) Some candidates understood that a more accurate value required a longer path of travel, but could not translate this into using a longer strip of paper.

Question 4

Q4a This calculation was attempted by most. Marks were usually lost for incorrectly reading the percentages from the chart (although the examiners worked though with these numbers so allowed some marks still to be gained if working was clearly shown).

Q4bii Candidates found describing the practical procedure difficult. The better candidates wrote down the steps required in a logical way. One way of doing this clearly is to use bullet points.

Q4c Many answers correctly calculated the number of moles for iron and oxygen. Some then were able to correctly calculate the ratio but then produced an incorrect formula for the oxide (some could not convert 1:1.5 to 2:3). Some candidates used 32 for oxygen rather than 16 which often led to muddle. It was pleasing to see that those with a correct formula were invariably able to then write a correctly balanced equation for the reaction.

Question 5

Q5aii It was surprising how many candidates gave 3 as the answer (number of full shells) or 2 (number of outer electrons).

Q5bi This question required careful reading – the similarity required was ins the **products** and not in the observations.

Q5bii Candidates found this question to be challenging with many referring to numbers of shells and electrons rather than how easily the outer electron(s) are lost.

Q5c In this extended writing question many candidates found it difficult to set out their answers clearly. Incorrect bonding types were often seen and also an inability, as a result, to correctly explain structures and melting points. For calcium there was a widely understood need for delocalised electrons to allow conductivity. With calcium chloride only a minority were able to explain conductivity in terms of ions being fixed when solid but mobile when molten. For chlorine some were able to refer to a lack of delocalised electrons and/or ions as the reason why it cannot conduct electricity.

In general, for extended writing questions candidates are advised to find a structure for their answer. In this question, they could have talked about the three substances one by one, or (perhaps a more difficult approach) they could have talked about the three structures and then analysed the properties one by one. Clear underlined headings are useful. Some candidates find bullet points a useful way of organising their thoughts.

In particular, in bonding/structure questions, candidates are advised to stop and identify the type of bonding in each substance first. Then to stop and double check this, before launching in to their answer.

Question 6

Q6a A wide variety of incorrect answers were seen explaining why dilute hydrochloric acid is strong. Reference was often made to indicator colours or pH values. Marks were sometimes lost by explaining that HCl fully dissociates or ionises (1 mark) but not stating that hydrogen ions are produced as a result.

Q6aii This was well done by most.

Q6b This is a question at the highest level, so unsurprisingly most candidates could not write a correct ionic equation. The most difficult part, unsurprisingly, is to identify what to omit from the full equation. It was a pity that some candidates knew to write down ions, but did then not delete the chloride ions.

Q6cii Many answers were able to explain that the pH would increase and end at 7 or above. Fewer went on to explain that the reaction involved neutralisation of an acid by a base. Only a minority then explained that this resulted in all the hydrogen ions having reacted or that there would be an excess of hydroxide ions.