

Examiners' Report/ Principal Examiner Feedback

June 2011

360Science

GCSE Science
Multiple Choice Paper C1a (5007)

GCSE Chemistry
Multiple Choice Paper C1a (5035)

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5007 Science/ 5035 Chemistry (C1a) Examiners' Report

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Foundation Tier

Q1 proved to be a good start for many candidates with 94% being correctly able to identify the hazard symbol. In Q2, 43% of candidates could recognise that a reaction that gives out heat is exothermic, with 38% choosing thermal decomposition. Q3 was found challenging by most candidates with only 9% correctly identifying that the method of collecting a gas shown was over water. Q5 proved slightly more successful with 43% of candidates working out that E211 contained atoms of the element hydrogen. Many candidates were unfamiliar that a flame test is used to prove that a salt is a sodium salt, with 30% choosing the correct key. It was disappointing that only 19% knew that phosphoric acid is used to make fertilisers, with the majority (48%) choosing vinegar.

The first two questions in the Metals section, Q10 and Q11, showed that candidates had a good knowledge of where most metals are found and their position in the periodic table, with 57% and 66% respectively choosing the correct answer. Q12, however, proved more challenging for some with 38% of candidates correctly identifying the symbol for copper. In Q13, 28% knew that sodium hydroxide solution produces a blue precipitate with copper nitrate solution. Q14 proved a little better, where 45% knew that lithium is in group 1 of the periodic. In Q16, 31% correctly knew that elements in the same group of the periodic table have different physical properties and similar chemical reactions.

In the overlap questions, Foundation tier candidates found questions 17, 19, 20, 21 and 24 particularly challenging. Q17 was found to be particularly difficult with only 8% knowing that baking powder contains sodium hydrogen carbonate and an acidic substance, but with 53% incorrectly thinking that it contains 'sodium carbonate only'. In Q19, only 29% knew that the gas produced when potassium hydrogencarbonate is heated is carbon dioxide; the same percentage of candidates incorrectly selected hydrogen. Knowledge of insoluble salt preparation was very weak in Q20, with only 23% choosing the correct answer (A), and with a higher proportion of candidates (31%) incorrectly thinking that heating a mixture of barium and potassium carbonate is involved in the preparation of barium carbonate (option B).

In the Halogens section, 27% knew that iodine is the least reactive halogen in Q21, but a much greater proportion of candidates (63%) incorrectly chose fluorine. In Q24, 39% knew that bubbling chlorine into potassium bromide solution to form bromine is an example of a displacement reaction.

Higher Tier

As would be expected, Higher tier candidates performed better than Foundation candidates on questions 17 to 24 but some of the weaknesses

indicated above (for Foundation candidates) were still present here especially in questions 17 (12% correct), 19 (45% correct), 20 (29% correct) and question 21 (55% correct).

Knowledge of periods was weak; in Q27 when asked to identify a transition metal in period 4, 34% chose the correct answer but almost equal proportions (31%) chose the element in period 5 (option D), and the element in group 4 (option B). Only 16% could identify the position of the alkali metal in Q28.

In the Salts section, 16% of candidates knew that magnesium oxide, hydroxide and carbonate react with dilute hydrochloric acid to produce magnesium chloride solution, with all the distracters being popular choices. As usual, balanced equations caused problems with only 34% choosing the correct answer in Q31; about 50% chose the options involving HCl_2 .

In Q33 knowledge of salt preparations was weak with 35% choosing to neutralise sodium hydroxide with dilute nitric acid, and all the distracters being popular choices. Only 32% could identify the salt with formula NaClO_3 as sodium chlorate. In Q34, 33% incorrectly chose chloride and 27% chlorioxide. In Q35, 35% knew that carbon is used to reduce copper oxide. Whilst 60% knew that phosphoric acid is used to make synthetic detergents (in Q36), only 20% of those candidates knew that it is also used to make fertilisers.

In the last section of this paper, Elements and compounds, 35% of candidates could identify the formula of a pale green precipitate formed as $\text{Fe}(\text{OH})_2$, with an equal percentage incorrectly choosing $\text{Cu}(\text{OH})_2$. 28% could identify the correct equation in Q39. In Q40, 57% of candidates thought that 'chlorine turns red litmus blue and then bleaches it', and 55% that gases collected by downward delivery are less dense than air; in fact none of these statements are true, and 19% of candidates correctly arrived at this answer (D).

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