

Examiners' Report/ Principal Examiner Feedback

March 2011

GCSE

360Science

GCSE Science

Multiple Choice Paper C1b (5008/01)

GCSE Chemistry

Multiple Choice Paper C1b (5036/01)

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5008 Science/ 5036 Chemistry (C1b) Examiners' Report

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Foundation Tier

In question 3, 46% of candidates knew that ethanol is produced from sugars but 36% of candidates thought that it is produced from hydrocarbons. In question 6, 45% of candidates chose the correct answer but 22% thought that glass decomposes to form carbon dioxide and 19% that glass can be disposed of by burning. In question 7, 37% of candidates could identify the gas making up about 20% of the pie chart as oxygen with 40% believing that it was carbon dioxide. Only 36% of candidates knew that methane is a hydrocarbon with 39% choosing a mixture of hydrogen and carbon. In question 17 only 20% chose the correct answer with 28% thinking that the fuel E85 was totally renewable and 37% that ethanol does not produce carbon dioxide when it burns. Only 40% of candidates could identify that a disadvantage of using hydrogen as a fuel is that it is expensive to produce, 23% thought that the product of combustion is toxic, 22% that hydrogen does not burn well in cold weather and 15% that it produces soot when burnt. Question 20 about an advantage of using hydrogen as a fuel was more poorly answered with only 15% of candidates choosing the correct answer, 40% thought that hydrogen is a bio-fuel, 28% that no waste products are formed and 16% that hydrogen is less explosive than petrol. The size of nanoparticles was not well known with only 37% of candidates choosing the correct answer for question 24, 38% thought that a nanoparticle of silver was smaller than a silver atom.

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 were still present especially in questions 17 (42% correct), 20 (24% correct) and 24 (47% correct).

Only 39% of candidates knew the correct answer to question 25, 23% thought that carbon dioxide is produced by the incomplete combustion of butane, 23% nitrogen and 15% sulphur dioxide. Whilst 85% knew that incomplete combustion occurs if there is insufficient oxygen, 45% thought that butane burns with a yellow flame during complete combustion. Whilst 84% of candidates knew that emulsifiers have a hydrophilic part and a hydrophobic part, 32% of these candidates thought that the hydrophilic part is attracted to oil. Only 41% of candidates chose the correct answer to question 29 with 30% choosing C_6H_{12} . Whilst 30% knew the answer to question 30, 31% thought that a Teflon coating reduces the amount of energy needed to cook the food. As usual chemical equations proved to be difficult with only 38% choosing the correct answer for question 32 and 25% choosing the ethene equation. Whilst 49% knew that yeast, sugar and water need to be present for fermentation, 31% thought that yeast, sugar and ethanol were necessary. In question 34, 28% thought that the statement 'scientists are certain that products containing nanoparticles pose no risk to humans' is correct. In question 36 whilst 85% knew that a Gore-Tex membrane prevents water droplets passing, 58% of these candidates thought that all the holes in the membrane are smaller than a water molecule. Only 14% chose the correct answer to question 37 with 43% believing that hydrogen is obtained from liquid air and 28% that sodium hydroxide is used for flavouring food. In question 38 whilst 68% of candidates knew that crude oil is heated before it enters the bottom of the fractionating column only 25% of these candidates also knew that propane is present in the fraction obtained from

the top of the column. Only 30% knew that the statement 'kerosene is more likely to solidify in cold weather than diesel oil' is incorrect with 28% thinking that the statement 'kerosene is less viscous than diesel oil' is incorrect. Only 35% chose the correct answer to question 40 with 35% thinking that the average size of the molecules in kerosene was smaller than those in gases.

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