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Examiners' Report/ Principal Examiner Feedback

November 2009

IGCSE

IGCSE Chemistry (4335) Paper 2H

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SECTION A

General Comments

Questions in this section are targeted at grades D and C.

Question 1

This question was about atomic structure. It was disappointing to see so many errors in the completion of the table in part (a). When the term "relative" is used in a table, the expectation is that candidates will use numbers to match the 1 and –1 provided. Apart from errors with signs and using 0 and 1 in the wrong places, a surprising number of candidates used 2 in more than one box. Part (b) was better done, with most scoring at least 1 mark here; there was little confusion between mass number and relative atomic mass. In part (c), although isotopes were well known, not all gave the correct number of protons in boron-6.

Question 2

Most candidates included "blue" in part (a), although sometimes as the start instead of the end colour, and there was some use of colourless instead of white. In part (b), although most knew the term "fractional distillation", not all identified the difference in boiling point as the reason why they could be separated in the apparatus shown - some answers simply gave "heat"; the outline of how pure propanone and water could be separated was poorly done, with some confusing the water in the flask with that passing through the condenser. The correct choices were often made in (c).

Question 3

This question was about the reaction between sodium and oxygen. Few candidates scored full marks. Some referred to covalent bonding, others had the electron transfer the wrong way round, and many had the oxygen atom gaining only one electron. A substantial number of candidates did not write symbols for the species formed, giving electron configurations such as 2.8 and 2.7 or 2.8.

Question 4

This question was about the halogens. Candidates had mixed success - a disappointing number failed to score either mark in part (a). In part (b), although more than half the candidates correctly identified where chlorine gas would be formed, a great variety of wrong answers were seen in (ii) and (iii). Part (c) was generally well done, with few errors in the word equation where the halogen and halide names were wrongly used (such as "sodium bromine"); unfortunately many candidates ignored the reference to word equation and wrote chemical equations instead, most of which were not correct.

Question 5

This question was mostly about alkanes and alkenes. Many good answers were seen to most parts of this question. In part (e), several candidates did not seem to understand the meaning of "general formula" and wrote a specific formula (such as C_4H_{10}). In part (g), a surprisingly large number of candidates wrote "n" instead of selecting a letter from the table.

SECTION B

General Comments

Questions in this section are targeted at grades A*, A and B.

Question 6

This question was about Group 1 metals. In part (a), the formula of Li^+ was better known than its flames colour. Many misunderstood the requirement in part (b) to identify the OH^- ion and repeated the Li^+ formula. Most candidates could accurately quote two observations for the sodium-water reaction, although the chemical equation was usually only correct from the better candidates. In part (d), most knew that the rubidium-water reaction was more violent, although there were some incorrect references to rubidium sinking or reacting more slowly than sodium.

Question 7

This question was based on the preparation of carbon dioxide. In part (a), although most candidates recognised the incorrect labelling of the reagents in (a)(i), some answered in terms of the gas jar being the wrong way round. Answers to the magnesium-oxygen reaction in part (b) sometimes referred to bubbles and precipitates. Only the best candidates scored well in part (c); in many answers there was no reference to the ions involved, although with relatively few actually mentioning atoms or molecules.

Question 8

This question was about the extraction and uses of iron. Part (a), about the raw materials used in the blast furnace, was poorly answered. Many candidates do not understand the distinction between raw materials and the chemical compounds in them, and calcium carbonate was a common answer for **K**, even though the name appeared in the question. Even though **J** and **L** were described as a black solid and a colourless mixture of gases, respectively, many gases appeared for **J** and solids for **L**. Interpreting the equations given in (b) was difficult for many candidates, although the formation of slag in part (c) was well known. Part (d) was well answered by most, but answers to part (e) were disappointing; even the chemical name of rust was often incorrect (eg corrosion or rusting), and the role of zinc was usually described in terms of a protective coating, and zinc was often said to be unreactive.

Question 9

This question was about some reactions of transition metals. The equation in part (a) was sometimes correct, although the II and III oxidation states were sometimes confused, and the explanation of redox was not well done, with the direction of electron transfer wrong in several scripts. The colours in part (b) were better known than the formation of precipitates. Part (c) brought some excellent answers from well-prepared candidates, but weaker ones struggled to score any marks.

Question 10

The colour change in part (a) was usually correctly described, although with some candidates quoting only one colour or giving the change in the wrong direction. Calculations of the type given in (b) and (c) are generally well done by most candidates, and this paper proved no exception, although some weaker candidates scored marks consequentially; there were relatively few complete blanks. Part (d) was very poorly done. Many of those who made sensible attempts did not start from the solution, as the question stated, but wrote at length about the titration. Very few candidates seemed familiar with the practical technique needed to obtain crystals of a soluble salt from a solution.

Question 11

This question was mostly about crude oil - its fractional distillation and cracking. The description in (a)(i) was generally poorly done. A few candidates wrote about a laboratory version of the process, while many did not mention condensation. The explanation in (a)(ii) often stated that the fuel oil fraction had molecules with lower boiling points, thus misunderstanding the direction of the temperature gradient. In part (b), although the formula of **X** was usually correctly deduced, the idea that cracking involves the breaking of single bonds and the formation of double bonds eluded most candidates. The questions on the reactions in parts (c) and (d) were usually well answered.

CHEMISTRY 4335, GRADE BOUNDARIES

Option 1: with Written Alternative to Coursework (Paper 3)

	A*	A	B	C	D	E	F	G
Foundation Tier				64	51	38	25	12
Higher Tier	74	62	50	39	25	18		

Option 2: with Coursework (Paper 04)

	A*	A	B	C	D	E	F	G
Foundation Tier				N/A	N/A	N/A	N/A	N/A
Higher Tier	N/A	N/A	N/A	N/A	N/A	N/A		

No candidates entered coursework so there are no grade boundaries for this option.

Note: Grade boundaries may vary from year to year and from subject to subject, depending on the demand of the question paper.

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