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Examiners' Report / Principal Examiner Feedback

November 2009

IGCSE

IGCSE Science (Double Award) (4437) Paper 5H

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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

In part (a), 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 (b).

Question 3

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 4

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}).

S E C T I O N B

General Comments

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

Question 5

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 6

This question was about equilibrium, based on the familiar thermal dissociation of ammonium chloride. Parts (a) and (b) were generally well answered, the idea of dynamic equilibrium in part (c) was at least partially understood. Predicting the changes in equilibrium in response to changes in conditions was less well tackled in parts (d) and (e).

Question 7

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 8

This question was about transition metals. The empirical formula calculation in part (a) was sometimes correct. Parts (b) and (c) brought some good answers from well-prepared candidates, but weaker ones struggled to score any marks.

Question 9

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) 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.

SCIENCE (DOUBLE AWARD) 4437, GRADE BOUNDARIES

Option 1 : with Paper 7 (Biology) & Paper 8 (Chemistry)

	A*	A	B	C	D	E	F	G
Foundation Tier				52	42	32	23	14
Higher Tier	76	65	54	44	35	30		

Option 2 : with Paper 7 (Biology) & Paper 9 (Physics)

	A*	A	B	C	D	E	F	G
Foundation Tier				52	42	32	23	14
Higher Tier	76	65	54	43	35	31		

Option 3 : with Paper 8 (Chemistry) & Paper 9 (Physics)

	A*	A	B	C	D	E	F	G
Foundation Tier				53	43	33	24	15
Higher Tier	N/A	N/A	N/A	N/A	N/A	N/A		

No candidates at higher tier entered so there are no grade boundaries for this category.

Option 4: with Coursework (Paper 10)

	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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