GCE

Chemistry B (Salters)

Advanced GCE **A2 H435**

Advanced Subsidiary GCE **AS H035**

Report on the Units

January 2009

H035/H435/MS/R/09J

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This report on the Examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the syllabus content, of the operation of the scheme of assessment and of the application of assessment criteria.

Reports should be read in conjunction with the published question papers and mark schemes for the Examination.

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Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annesley
NOTTINGHAM
NG15 0DL

Telephone: 0870 770 6622
Facsimile: 01223 552610
E-mail: publications@ocr.org.uk

CONTENTS

Advanced GCE Chemistry B (Salters) (H435)

Advanced Subsidiary GCE Chemistry B (Salters) (H035)

REPORT ON THE UNITS

Unit/Content	Page
Chief Examiner's report	1
F331 Principal Examiner's report	2
Grade Thresholds	5

Chief Examiner's report

Welcome to the new Salters Specification! The number of candidates taking the first unit F331 is similar to those taking 2850 for the first time last year, which shows an encouraging take-up for the new version of this applications-led course.

From the report below, it will be seen that F331 performed well and gave ample opportunities for candidates to show what they had learned and what they could do. They had ample time in which to write their answers. The level of chemical maturity of these January candidates, only a term after their GCSE examinations, is most gratifying. Congratulations to them and their teachers.

Candidates should be reminded that draft answers should be clearly crossed out and any draft pencil marks carefully erased.

Tip for candidates:
Avoid rubbing out as much as possible, cross out and re-draw wherever you can. Never over-write a number or word to change it, always cross it out and write it again. While neatness makes you proud of your work and the Examiner's job easier, it must take second place to clarity

INSET events for new GCE Chemistry B (Salters)

OCR A2 Level Chemistry B (Salters) (H435): *Get Started – towards successful delivery of the new specification.*

These **new full day** courses will give guidance and support to those planning to deliver the new A2 level Chemistry B (Salters) (H435) specification.

Course dates and codes – Tuesday 10 March 2009 (London, OSCD501), Wednesday 25 March 2009 (Birmingham, OSCD502), Wednesday 1 April 2009 (London, OSCD503).

Fee – £160 including refreshments, lunch and course materials. £190 if you book within 7 days of the course date.

Places may be booked on these courses using the booking form available on-line (http://www.ocr.org.uk/training/alevel_inset_training.html). Please quote the course code in any correspondence.

For details of INSET events from Autumn 2009 please see www.ocr.org.uk\training

F331 Principal Examiner's report

General Comments

This 60 mark paper, the first set on the new specification, seemed to provide continuing opportunity for well-prepared candidates to score well and marks ranged from single figures into the high fifties.

Examiners reported that time did not appear to be an issue and that there were relatively few 'no responses' to part questions.

Question 3, essentially an energetics question involving two calculations, proved the most difficult for candidates to score highly on, but perhaps not surprisingly showed the highest differentiation between the more able and less able candidate.

Newer aspects of the specification, such as ‘How Science Works’ and ‘time-of-flight’ mass spectroscopy were all handled relatively confidently by candidates.

Comments on Individual Questions

Question 1

1a A significant proportion of candidates got all three marks on this ‘How Science Works’ question.

1bi Well answered.

1bii This was the most discriminating part of question 1. Some candidates gave answers in terms of the carbon-12 standard; others missed the idea of whole numbers of protons and neutrons in mass numbers.

1c A small number of candidates produced the wrong sort of nuclear process, including neutron capture and beta decay. Some unfortunately put mass and proton numbers on the wrong side of the symbol.

1di This question, involving a new context in the specification, for uses of radioisotopes, perhaps not surprisingly proved difficult to get both marks.
Examiners were looking for the idea that the half life remained constant in the process and/or that there had been no loss or gain of either parent or daughter radioisotope since the rock had formed.

1dii The labelling of the mass spectrometer was generally well done.

Question 2

2ai The majority of candidates scored two marks on this question, with the third mark, the lines becoming closer at higher frequencies (not closer to the right!) often missed. Some candidates spuriously went into the origin of the spectrum, which was not asked for in the question.

Tip for teachers

Make sure candidates understand the 'command' words.
E.g. 'Describe' in the example above does not require an explanation.

2aii These marks were also awarded as an 'error carried forward' from part **i** and most candidates therefore gained both marks.

2bi The dot-and-cross diagram was generally well done by all but the least able candidates. The problem of draft marks has been highlighted above.

2bii This question effectively discriminated the most able students from the rest. The quality of chemical explanation being markedly more structured in the responses from better candidates.

Question 3

3a This 'suggest' question either produced very vague responses e.g. 'greener', which did not score, or candidates gained both marks. This was across the ability range.

3bi The majority of candidates were able to recall the appropriate relationship between energy and temperature change, heat capacity and mass and this was pleasing. However a significant minority used the wrong mass i.e. the mass of fuel burnt was used instead of the mass of water.
Numerical answer: 10450

3bii This proved difficult for the weaker candidates, notwithstanding examiners operating 'error carried forward'. The more able candidates scored 3 or 4 on this discriminating question with the minus sign being the most commonly missed mark.
Numerical answer: -401

3biii Generally well-answered.

3ci This part question along with **cii** was probably the most disappointing candidate response on the paper. Many candidates failed to label which were the bonds broken and which made, and the double bond in the oxygen molecule was often missed

3cii There is still a poor understanding across candidates of all abilities about the relationship between energy and bonds broken and formed. Only the top candidates were able to give a cohesive explanation in terms of energy taken in and given out.

Tip for teachers

The relationship between energy taken in and given out in a chemical reaction is a common theme on this first AS paper. It would be prudent for teachers to prepare their candidates via previous examples of this sort of question.

3d A straightforward question that was relatively well-answered.

Question 4

4ai Very well-answered.

4aii Many correct answers but a significant minority of candidates circled only part of a hydrocarbon chain or the carbons in the 'glycerol' section.

4aiii Well-answered.

4aiv Disappointing. A large number of candidates could not produce $C_3H_8O_3$, often grouping the OH's.

4bi Generally well-answered.
Numerical answer: 456

4bii Clarity of explanation let many students down (at all levels of ability) in this question.

4ci Well-answered.

4cii More able candidates had no problems with this equation but weaker candidates often produced the wrong formulae for the diatomic gases involved.

4ciii This was only one mark but the importance of the very strong triple bond in nitrogen gas was often missed by candidates.

Grade Thresholds

Advanced GCE Chemistry B (Salters) (H035/H435)
January 2009 Examination Series

Unit Threshold Marks

Unit		Maximum Mark	A	B	C	D	E	U
F331	Raw	60	46	41	36	32	28	0
	UMS	90	72	63	54	45	36	0

For a description of how UMS marks are calculated see:
http://www.ocr.org.uk/learners/ums_results.html

Statistics are correct at the time of publication.

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

14 – 19 Qualifications (General)
Telephone: 01223 553998
Facsimile: 01223 552627
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