RECOGNISING ACHIEVEMENT

GCE

Chemistry (Salters)

Advanced GCE **A2 7887**

Advanced Subsidiary GCE **AS 3887**

Report on the Units

January 2007

3887/7887/MS/R/07J

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REPORTS ON THE UNITS

2848 - Chemistry of Natural Resources

General Comments

Candidates' marks covered a wide range, from single figures to the early eighties, although there were fewer of the very low marks than have been seen in recent sessions for this paper. A good proportion of candidates scored satisfactorily overall, gaining a mark in the range from 40 to 55. There was no indication that candidates had a problem with the length of the paper, with answer spaces that were left blank being uncommon and tending to indicate a lack of knowledge and understanding rather than time constraints.

Good attempts were made at the calculation questions (including values for oxidation states), where candidates generally set out their answers clearly and it was evident what was being calculated at each stage. This meant that candidates gained credit even if they had made a mistake, because they were given marks under the 'error carried forward' rules. Most candidates scored well on questions requiring them to draw a diagram, both of apparatus and chemical structures.

Marks were generally much lower on questions that required candidates to write about aspects of chemical equilibria, organic chemistry, infrared spectroscopy and the greenhouse effect. They also scored less well on questions that asked for reaction equations, particularly if they were ionic. A limiting factor for many candidates was their poor literacy skills, with many showing a weak grasp of the appropriate use of technical vocabulary. This meant that marks on the longer answer questions in particular were often quite low.

Comments on Individual Questions

Question 1

This was a high scoring question for many candidates.

a) Most answered this correctly, although 'methyl' was a very commonly seen incorrect answer.

b)
- (i) A significant number of candidates scored the marks here with a few getting confused and recording the colours the wrong way round.
- (ii) Most candidates scored at least one mark here, with both marks being awarded in many cases.
- (iii) Only the best candidates scored both marks here. Some candidates gained one mark for showing Br_2 taking part in an addition reaction, but not producing a fully saturated product.

(c)
- (i) Many candidates gained the mark here, either for writing water or giving its formula. A common mistake was stating hydroxide.
- (ii) Many candidates gained one mark for 'tertiary' but failed to score the second mark because their explanation was too vague.
- (iii) Many candidates who had realised that the alcohol is tertiary went on to score both marks here. Those who had mistakenly stated that it is a secondary or primary alcohol had the opportunity to score marks for error carried forward.

(d)
- (i) This mark was not scored as often, with a significant minority giving condensation as the reaction type.
- (ii) This was poorly answered in many cases. Details of the reagents required were often poorly recalled and some reaction conditions that were given were contradictory.

(e) Most candidates drew the correct structure here, with the most common error being to include four hydrogen atoms instead of three hydrogen atoms and one X.

(f) Answers varied widely in standard, sometimes with very good answers from weaker candidates and vice versa. Failure to score marks on this question were generally attributed to

- candidates getting confused between types of intermolecular force and incorrectly describing the way in which permanent dipole – permanent dipole forces of attraction arise, or
- poor literacy skills leading to candidates writing answers in which they contradicted themselves or were not sufficiently accurate to gain credit.

Question 2

This question was often reasonably well done, with the exception of those parts that required candidates to write about equilibrium processes or write an equation.

a)

i) Many scored one mark here, but scoring two marks was much less common. This was because candidates did not specifically refer to the change in the position of equilibrium.

ii) Two marks were scored by some candidates for referring to the equivalence of forward and backward reaction rates. It was quite rare for candidates to score both marks if they explained the two terms separately.

iii) The majority of candidates gained this mark.

iv) Again, most candidates scored this mark.

b)

i) Many candidates failed to score the mark for the equation, with a significant minority incorrectly writing S^{2-} for the sulphate ion, even though they were given the correct formula in the question. Some candidates failed to include state symbols, although many who did gained the mark – even if they had not written a fully correct reaction equation.

ii) Many candidates gained both marks, with the most common mistake that lead to only one mark being awarded being not to show an airtight closure with a bung.

iii) This question was generally high scoring, sometimes due to the application of error carried forward. Some candidates failed to give the correct number of significant figures.

c)

i) Many candidates scored full marks for well-drawn and detailed diagrams.

ii) Many candidates scored both marks here, with a few gaining one mark for showing the correct total number of electrons.

Question 3

Many candidates scored well on the first two pages of this question, but were let down by their performance on the last few parts.

a)

i) Many gained both marks, but a significant minority seem to have misread the question and gave answers that suggested they thought they were being asked about the most abundant pollutants, with answers often including compounds such as carbon dioxide and methane.

ii) Many candidates gained credit here, although again marks were often lost for poorly worded answers in the second column of the table.

b)

i) Many scored the mark, but a common error was to state lone pair of electrons instead of an unpaired electron.

ii) This equation was often correctly written, even though most equation answers on the paper overall were poorly answered.

iii) The majority of candidates scored this mark.

iv) Only the very best candidates scored both marks here, with a few gaining one mark. Failure to score came from either leaving out the concept of collisions from the answer or not explaining that the activation enthalpy is the minimum combined energy of the particles on collision that lead to a reaction.

v) This was a high scoring question, with many candidates gaining full marks. A few lost one mark because they forgot to state that the reaction rate increased, although they did explain the increase in energy of the particles and that this lead to more successful collisions.

vi) Many scored two marks here. The most common problem that lead to lose of marks was the inability of some candidates to write in standard form (so the ‘x 10^{15}’ was either missing altogether or given to an incorrect power).

vii) The best candidates scored both marks, but often answers were vague and did not gain full credit. The most commonly lost mark was the one for referring to the uv or radiation that is needed to break the bonds.

c)

i) Few scored this mark, with a wide range of incorrect answers being given that suggested a lack of recall or knowledge of the practical work on which this question is based.

ii) Very few correct responses were given here. Candidates often referred to electrons, but the link between infrared radiation and vibrations of bonds was rarely mentioned.

iii) Many scored the first mark here for writing about carbon dioxide absorbing energy radiated from Earth’s surface. Most, however, failed to go on to score the second mark because their answers were not sufficiently detailed.

Question 4

The quality of answers to this question was very varied. Most candidates gained some credit for calculations and values for oxidation states, but few marks were scored for equations and written explanations were often poor.

a) Most gained this mark.

b) Few gained this mark. Most incorrect answers showed an oxygen molecule combining with an oxygen atom to form ozone.

c)

i) A large number of candidates gained both marks.

ii) Some candidates scored two marks here, although credit was lost because candidates did not give answers that were specific to the example they had been asked to write about, or because they got the oxidation and reduction the wrong way round.

d)

i) Good candidates scored both marks here, but many failed to gain credit for the equation.

ii) Again the best candidates scored both marks, but many gave an equation with electrons on the wrong side or that was not balanced.

iii) Most candidates scored one mark here, with the most common error being a failure to divide the volume by 1000.

iv) Most gained this mark.

v) Many gained this, in some cases through error carried forward.

vi) Again, most scored here.

e) The majority of candidates scored this mark.

f) A number of candidates scored this mark, although a significant number gave answers that were vague (such as ‘used in plastics’) and so did not gain credit.

g)

i) A number of candidates knew the name, although a common error was giving ‘3-chloromethane’.

ii) Most gained this mark.

iii) Many gained credit here, with a few failing to show the 3-dimensional nature of the structure.

iv) There were some very good answers here, although credit was lost by many candidates due to literacy issues. Most candidates gained some credit for explaining the partial charges, but only the best candidates gave a correct explanation for the overall permanent dipole of the molecule.

2849 - Chemistry of Materials

General Comments

All Assistant Examiners commented that the paper was accessible, of the appropriate standard and discriminated effectively between the most able and the weakest candidates. There are still a significant number of candidates whose marks are in single figures and who have little knowledge of chemistry at any level.

In January, the candidates' level of examination awareness and past paper practice is of necessity a stumbling block for many; an inadequate reading of the question coupled with poor presentation skills made for sloppy answering and inappropriate responses. However some excellent answers were produced across the whole paper by able candidates who took much pride in formulating detailed and relevant, yet succinct answers. There is clearly some good practice in teaching throughout many centres, particularly in taking on board advice given in previous reports.

The overall quality of written communication and answer presentation remains a problem. There is no evidence that there is a time problem with the paper, so candidates need to be encouraged to consider what the question requires, and if appropriate to plan their response.

Generally students were much more effective in using the Data Sheet, though a few did confuse infrared and n.m.r. spectroscopy.

Mole calculations proved very difficult for many, and certainly it seemed to be a bigger problem this year, although the ability to use the 'appropriate number of significant figures' was very much better, with the stronger candidates often stating the number of figures used.

Comments on Individual Questions

1) (a) Many understood the different levels of protein structure, though some confused the ideas with primary, secondary and tertiary carbon.
atoms in a chain. The commonest error was to forget to mention in discussing the 'primary structure' the order or sequence of the amino acids.

(b) A common error was to use concentrated sulphuric acid, though a greater percentage got this correct this time round. Most knew that reflux was important.
In (ii) many suggested thin layer chromatography, and received credit, but a few suggested a variety of instrumental techniques.

(c) In (i) some candidates just rephrased the question and did not mention intermolecular forces.
Most though knew the structure of the zwitterion, including the correct charges, but many made unnecessary errors in drawing its structure *e.g. not including the single hydrogen substituent.*

Tip for students
Check that every carbon atom in a structure has 4 bonds.

Misconception
The charges on the zwitterions cause an increase in the intermolecular forces such as hydrogen bonding rather than the idea of strong ionic forces/bonds.
The structure of the peptide again was often correct, though some did draw a repeating unit for a polymer. Again there were some mistakes with the number of bonds around each carbon. We did allow for error carried forward here.
It was only the most able who scored both the 'optical isomer' and the 'fitting the active site' marks in (v). Most got one or the other, but a significant number of cis-trans isomers were seen.

2) (a) There were some excellent answers here and teachers have obviously been effective in teaching their students. The commonest errors were in choice of locating technique and in stating that two spots would be observed at the end of the experiment.

Misconception
Some confusion between t.l.c. and paper chromatography. Ninhydrin was assumed to as effective as ultraviolet radiation or iodine for locating alcohols/phenols, whilst paper was preferred to a t.l.c. plate.

(b) Usually Centre dependent, many were unaware that acid chlorides react with alcohols to give esters.

Misconception
The alcoholic OH was thought to be acidic rather the phenolic OH.

(c) Many did not read the question carefully enough and included peaks such as C-H, which clearly do not involve oxygen. Some suggested a benzene ring, whilst others hedged their bets by drawing several bonds.

(d) Knowledge of ion stability linked to electron delocalisation was very good, but few considered the impact of this on equilibrium position.

(e) A majority obtained a mark for identifying the different numbers and types of OH peaks in C and D and relating this to peak heights/intensities. However, yet again poor question reading led to inappropriate responses by some candidates who often considered all of the proton peaks. Some gave general statements about the technique or principles involved rather than applying them to the example set.
In (ii) most recognised that the product was an ester even if they were uncertain about its structure. However, only a few knew that **both** the R-OH groups reacted rather than the phenolic OH.

3) (a) The equation was very well done, yet even the ablest occasionally slipped up.

(b) Very Centre dependent, with many good candidates unable to explain the principles involved. Often terms such as 'anti-clockwise', 'reverse the equations' or 'higher (or lower) electronegativity' were invoked leading to confusion and often contradiction. This is an area teachers need to focus on as students of all abilities are clearly not comfortable in using the ideas and principles involved and neither are they precise enough in marshalling their arguments.

(c) Candidates had a tendency to name the complex (this is not required by the specification) rather than the ligand, whilst often choosing linear or tetrahedral as the shape of the complex.

(d) The main problems in (ii) were writing the charges outside the concentration brackets and in adding the concentration terms rather than multiplying them. The better candidates knew that the effect of temperature on equilibrium is related to the enthalpy change for the reaction. Few could give a reason why the equilibrium position for the formation of solid iron(III) hydroxide is well over to the right.

(e) Although most understood this question some wrote at length about the splitting of orbitals.

(f) A majority got both parts correct, but redox and titration were frequently seen as wrong answers.

(g) Hydrochloric acid was frequently given as a suitable acid instead of sulphuric acid. However the main problem stemmed from little understanding of the principles behind this type of calculation. A majority tried a formulaic approach with virtually no success. They invariably substituted the concentration and volume terms using the data given in some random manner, gaining no credit. Few of these candidates were able to use volume units correctly.
The more able candidates usually coped well, yet a number changed their final answer to 2 or even 1 significant figure(s).
Candidates need to remember to specify that the pale pink colour needs to be a permanent change at the end point of the titration.

4) (a) Some candidates seemed to be concerned about writing condensation more than once, so tried various alternatives such as esterification or copolymerisation.

(b) Most were able to recognise the ester as the functional group in polymer G.

(c) Biodegradable or a description of the decomposition process was usually correctly given.

(d) Most candidates managed to take on board the advice given at the start of the question regarding the mark for the quality of their writing. A few chose to ignore it, but by this time their scores were usually minimal anyway.

Surprisingly a good number of weak candidates were able to score marks here. Problems arose when candidates focused more on structure than on intermolecular forces or failed to compare the relative strength of the various forces. Some spent too much time discussing at length why hydrogen bonding arises.

(e) Generally candidates had a good understanding of hydrolysis; some answered for the wrong polymer or failed to give the salt when using sodium hydroxide as the reagent.

(f) Some good answers, but marks tended to be centre dependent rather than based on the innate ability of the candidates. If a mark was lost by a candidate it was often because they failed to mention the lack of chain movement.

5) (a) Answers were often too imprecise to award any credit, marks were often gained through working out that the correct electron structure for cobalt. They seemed unable to compare the two structures in a sensible manner.
In (ii) few gained the second mark for giving a brief comment how the d orbitals enabled catalysis to occur. Homogeneous was understood but some failed to say what the 'same state' was.

(b) Candidates found this the most difficult question on the paper; it was meant to be at an A grade level. Some were able to suggest a substance or property to measure but only a few could go on to say how they would monitor the change.

In (ii) most could draw a correct curve but few gave details of how to measure any tangent drawn. Fewer linked this to the initial rate. A significant number tried to measure half-lives.

(c) Although many of the weaker candidates failed to work out the orders correctly, an amazing number were able to gain marks for writing a correct rate equation based on their wrong answers.
Few were able to substitute the numbers in the equation correctly, even allowing for the omission of the 10^{-4} factor, to calculate a rate constant. Even fewer could work out the units correctly. They need to remember that a rate constant at this level will always contain s^{-1}.

Generally the level of marks on this question was centre dependent, with candidates of all abilities from some centres scoring well.

2850 - Chemistry for Life

General Comments

It is a fact that for many candidates this paper is taken only one term on from their GCSE exams. It is perhaps not surprising, therefore, that candidates find the context base of the questions, coupled with the need to logically sequence ideas, relatively difficult this early in the course. With familiarity over the first year their ability to see through the context rapidly improves and candidates should be encouraged that this will be the case.
The distribution of candidate marks for this paper was very similar to the January 2006 paper and grade thresholds were therefore roughly the same.
The paper achieved good discrimination with marks in single figures, to marks of over seventy.
The most able candidates tended to score fairly evenly over all the questions.

Question 1, although a long opening question, was generally well answered by candidates with question 2 proving the most challenging.
Calculations were reasonably well attempted, but those involving gas volumes (question 3(d)) did tend to trip up less able candidates.
Longer answers, particularly 2(b)(ii), were better structured than of late, although the chemistry was often flawed.
There was no evidence reported by the examining team of problems with time.

Comments on Individual Questions

1) Candidates often scored highly on this question

(b) (i) Able candidates usually scored two marks, for 'longer chains' and 'incomplete combustion' and occasionally all three marks.
A check of the mark allocation should have keyed candidates into searching for a third valid point and the mark scheme was widened to include a range of reasonable suggestions.

(c)/(d) Both these parts were generally well answered, with part (d) in particular being pleasingly tackled by most candidates.

> **Tip for candidates**
>
> Always check the mark allocation on each part question.
> There will be a specific marking point for each mark.

2) Probably the most challenging question on the paper.

(a) (i) This was not well answered, with candidates failing to realize that a group 2 cation will have a charge of +2 and therefore the anion for the given formula must be -2

(ii) Most candidates seemed to realize the structure should be tetrahedral but diagrams were very variable in clarity.

(b) (ii) This question attempted to help candidates structure their response by including a blank space to draft out their answer. This approach appeared to have some success.
Examiners did however report quite a large number of candidates gave answers in terms of atoms being excited to new energy levels with no mention of electronic energy levels or indeed electrons.

Also many candidates failed to realise that the frequency of a line was related to the energy **gap** between quantised electronic energy levels, often describing the line as representing a particular energy level.

Candidates achieving the fifth marking point for sets of lines were few and far between, but where this mark was scored the whole answer was beautifully set out and logically explained.

(iii) Similarities were usually well answered but some candidates failed to make a comparison for the 'difference mark.'

(c) Although the solubility of the carbonates was a fairly common correct response other responses often included such properties as ionisation enthalpy or simply 'reactivity.'

3) This question probably gave the widest range of scores on the paper. Parts (a) and (b) were generally well answered and of course 'error carried forward' marks were allowed following wrong calculation in the tellurium isotope's table.

(c) There was evidence here that some candidates did not appear to take note of the information given in the question and on the graph. This resulted in a very variable set of marks on this relatively straightforward question.

(d) Again variably attempted, with a wide range of scores. Many candidates seemed uncomfortable with gas volumes.

(e) A wide range of marks with common errors being the neutron and/or electron wrongly represented in part(i).
Numerical answers (b)(ii) 128 (d)(ii) 0.033 (d)(iii) 2.4

4) (a)(i) Candidates were rather too vague in their answers to this recall question, often quoting the 'energy needed' rather than the enthalpy change occurring.

(a)(iii) Not well answered with only a small number of candidates getting both the correct substances and a suitable explanation, e.g. the standard enthalpy of formation of elements in their standard states is zero.

(b) Well answered.

(c)(i) A disappointing number of candidates could not draw a correct dot-cross structure for the nitrogen molecule.

(c)(ii) Candidates usually got the obvious answer of the high bond energy/enthalpy for the triple bond but again perhaps forgot that for two marks some suitable suggestion of why it is so high was needed e.g. strong attraction between the bonding electrons and the nuclei of the N atoms.

(d) This was reasonably well attempted with most candidates being able to score two or more marks
Numerical answer (a)(ii) -9736

2854 - Chemistry by Design

General Comments

This paper was taken by just over 70 candidates only, the vast majority of these retaking the paper after their second sixth-form year. Candidates showed that they had worked hard on the concepts of the final Salters units. Most candidates indicated a determination to gain as many marks as they could; there were usually very few gaps and no indications of time problems. Numerical answers were often good and long answers were fairly well expressed. Some candidates found the short answer questions testing organic knowledge (question 5) difficult.

Comments on Individual Questions

Question 1

Most candidates found this quite an easy question and marks in the middle twenties were common, showing a good understanding of some of the chemical ideas from Aspects of Agriculture and Medicines by Design. Most scored on part (a) and part b(i) and part b(ii) were often well done, the hardest mark being the reason that higher pressure causes a faster reaction in part (b) (ii). "More collisions" was not enough. There were many good answers to page 3, with just the occasional careless error getting in the way. Parts (e) and (f) were also well done. Not all scored two marks on part (g) (i) and part (g) (ii) was found a little harder. Some left off the hydroxy group and some could not name the structure even though they had the correct formula. Part (h) showed that most candidates had an excellent knowledge of spectroscopy and could write about it well, using correct terminology.

Numerical answers part (c) (i) –220 J mol^{-1} K^{-1} part (d) (ii) 11 atm^{-2}

Question 2

This question mainly tested Colour by Design and many candidates found aspects of it hard. Most, though not all, could indicate the azo group and a few more knew the test for a phenol. Many could not deduce correctly the number of hydrogen atoms in Sudan I. Relatively few got two marks on part (d), though many scored one mark for identifying a possible pair. Part (e), on the other hand, was usually correct, including the name of D. Many knew the reagents and conditions for the Friedel Crafts reaction, though some lost marks by naming the reagent "chloroalkane" rather than "chloromethane". Most scored part (d) (ii) and part (d) (iii). In part (d) (iv), on the reasons for the dye being coloured, most started well but an unexpected number restricted themselves to two marks by saying that the orange light was emitted as the electrons dropped back down. Part (g) (i) also caused more problems than had been expected. Part (g) (ii) on relative solubility was found hard, as expected. Candidates would do well to remember that in this (and other questions involving intermolecular forces) they will score some of the marks for naming the forces between the individual molecules and the molecules when mixed, and indicating their relative strengths.

Question 3

This question was better done. Most scored in part (a) (i) and many in part (a) (ii). Some did not realise that a simple answer in terms of electronegativity was all that was required in part (b) (i). In part (b) (ii), many realised that the dipoles cancelled, but few explained that this was caused by the symmetry of the molecule. Most drew the hydrogen bonds in the right places in part (d) (iii) and, again, most put in sufficient detail, the linearity of O-H-O being the mark most often missed. The synoptic question in part (c) (i) was taken by most in their stride and most could write an equation in part (c) (i). It was decided to allow an equation resulting in H_2 as a product because candidates would not necessarily have come across hydrogen peroxide in their course. There was a wide variety of answers to part (c) (iii) and anything suitable was allowed, provided it had correct bonding. Part (d) was usually correct.

Question 4

This question had mixed response to its different parts. Part (a) was usually well done, as was part (d) (i). The gas volume calculation in part (d) (ii) caught out some candidates, though those who wrote out their working often scored partial credit. Once again, many found significant figures difficult. Part (c) (i) was not well understood, but part (c) (ii) was often correct., as was part (c) (iii). Many scored on part (c) (iv), a common calculation, and then tripped up on part (v), trying to solve it by the same method. In part (d) (i), many could define a buffer solution. More joined them in explaining how such a solution worked, though some confused alkali and HSO_3^- and few mentioned that large concentrations of acid and conjugate base were necessary. On the whole, the answers were written in quite good English and the "SPAG" mark was scored. Scoring on part (d) (ii) was quite high

Numerical answers part (b) (ii) 46 kg part (c) (iv) 1.4 part (c) (v) 0.7 part (d) (ii) 2.1

Question 5

This question required a good knowledge of organic structures and reactions and caught out some candidates who had done quite well up to this point. Others took off here, however. Not a vast number scored on part (a) (i) and most scored one mark rather than two on part (a) (ii) for showing some but not all of the chiral centres. Many did not identify the amine group in part (b). Those who did usually scored the other two marks. Parts (c) (i), (ii) and (iii) were often found difficult, though more scored on part (c) (iv). Part (d) (i) and part (d) (iii) were reasonable, though relatively few scored on part (d) (ii) and even fewer in part (d) (iv). "Ethanoic acid" and "acyl chloride" were near misses here.

2855 - Individual Investigation

General Comments

The entry for this component was very small, consisting of only fourteen candidates from twelve Centres. Other Centres had made entries but candidates were withdrawn after the entry had been made.

In about half the Centres the marks awarded were felt to be appropriate, often to work of a high standard. In other cases, the marks awarded by Centres were inappropriate, as the marking descriptors at the levels selected had not been sufficiently met.

In examples of good practice, Centres explained why specific marks had been awarded in each skill area by matching candidate performance against specific coursework descriptors. In less good practice, explanations were given in much more general terms and did make clear why higher marks had not been given.

A small number of candidates carried out investigations of a very biological nature which had an adverse effect on the quality of the chemical aspects of their work.

Several Centres did not meet the deadline for sending candidates' work for moderation.

Comments on Individual Skill Areas

Planning

To meet the descriptors at level 11 it is necessary for candidates to include fine detail of their plan. This should include fine detail of experimental procedures as well as comprehensive coverage of the background chemical ideas which have been researched while devising the plan. Risk assessments of acids and alkalis should be appropriate to the concentrations of the solutions actually used in the investigation.

References

It has become increasingly common for candidates to include references to the internet. These should contain a brief description of the content of the link and not simply be a complicated web address. References to books should include appropriate page numbers.

Implementing

Where a titration is used during an investigation, all burette reading should be recorded and not just the titres. Where titres are very low, it is expected that candidates will dilute one of the solutions and carry out further titrations to generate higher titre values. If this is not done, then the data will not be of sufficient quality to meet the descriptor for the recording strand of implementing at level 8.

Analysing

In some cases, candidates did not meet the higher level descriptors because they did not clearly link their conclusions with underlying chemical knowledge and ideas. In other cases, conclusions were superficial and tended to describe rather than evaluate the collected data. Some candidates did not take sufficient care in their choice of tangents drawn on graphs in order to find the initial rate of reaction.

Evaluating

The calculation of uncertainties associated with measurements has improved over the past few sessions, but some candidates do not consider all types of measurements that they have made. In kinetics investigations it is important that the uncertainty associated with time data is estimated. The identification of sufficient limitations of experimental procedures is often less well done and prevents candidates from accessing the highest mark levels.

Advanced GCE Chemistry (Salters) (3887/7887)

January 2007 Assessment Series

Unit Threshold Marks

Unit		Maximum Mark	a	b	c	d	e	u
2848	Raw	90	69	62	55	48	41	0
	UMS	120	96	84	72	60	48	0
2849	Raw	90	65	57	49	41	34	0
	UMS	90	72	63	54	45	36	0
2850	Raw	75	52	45	39	33	27	0
	UMS	90	72	63	54	45	36	0
2854	Raw	120	85	76	67	58	50	0
	UMS	120	96	84	72	60	48	0
2855	Raw	90	76	68	60	52	44	0
	UMS	90	72	63	54	45	36	0

Specification Aggregation Results

Overall threshold marks in UMS (*i.e.* after conversion of raw marks to uniform marks)

	Maximum Mark	A	B	C	D	E	U
3887	300	240	210	180	150	120	0
7887	600	480	420	360	300	240	0

The cumulative percentage of candidates awarded each grade was as follows:

	A	B	C	D	E	U	Total Number of Candidates
3887	14.0	33.7	56.3	78.9	96.6	100.0	368
7887	21.7	55.1	79.7	94.2	97.1	100.0	71

439 Candidates aggregated this series.

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

Statistics are correct at the time of publication.

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