GCSE

Additional Science A
Twenty First Century Science

General Certificate of Secondary Education **J631**

Report on the Units

January 2009

J631/MS/R/09J

Oxford Cambridge and RSA Examinations

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

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GCSE Twenty First Century Science - Additional Science A (J631)

REPORTS ON THE UNITS

Chief Examiner's Report

Several examiners commented on the high standards which were shown across this suite of examination papers. Candidates appear to have been well prepared for each examination, and had been entered for the correct tier.

In all cases, candidates appear to have had ample time to finish the paper, and also appeared to have used that time productively. The significant number of alterations to answers shows that many candidates were re-visiting questions and considering their responses carefully. In many cases, these alterations were clearly marked, but there were still occasions when examiners were concerned that a candidate's intentions may not have gained credit due to an unclear alteration. Candidates should never try to alter an answer, but should cross it out and replace it clearly with the new version.

Important changes to papers A215, A216 and A217 from January 2010

Up to, and including, June 2009, the current model for the objective style question papers will continue to be used. In these papers, all questions currently require objective responses: candidates select from a defined set of alternative responses or provide a short answer which is expected to be clear and unambiguous.

From, and including, January 2010 a new style of question will be introduced to these papers. While the majority of questions will continue to be objective, following the current format, a number of questions on both Foundation and Higher tiers will be open-ended, requiring candidates to provide longer written answers without selecting from a set of alternatives. Each of these responses will be worth from 1 to 4 marks, providing candidates with opportunities to organise information, develop arguments, analyse and evaluate.

The papers affected all carry 42 marks. These open-ended questions will in total carry 12-14 marks of those available, with the remaining 28-30 marks continuing to be assessed with objective style questions.

New specimen assessment materials for these papers have been developed and are awaiting approval by QCA. As soon as they have been approved, centres will be informed with a further 'Notice to Centres' and the papers will be made available on the OCR website (www.ocr.org.uk). At the same time, revised specifications will be published to reflect these changes. No other significant changes have been made to the specifications, but a small number of minor corrections and clarifications will be included and highlighted at the time of publication.

A215/01 – Twenty First Century Additional Science A (B4, C4, P4) Foundation Tier

General Comments:

The paper was well attempted with a high mean mark. The level of difficulty was appropriate for the ability range and there was good differentiation across the grades, allowing all candidates to show their knowledge and understanding of the subject. Scores ranged from the mid teens to high thirties.
Candidates had been well prepared for this style of paper with hardly any questions being omitted. All candidates made good use of their time and were able to complete the paper. The number of 'no response' answers was very small.
Most candidates correctly followed the instructions in the questions and most made their responses appropriate to the number of marks available.
There were few ambiguous answers on the papers. When candidates changed their minds alterations were generally clear and it was easy to see what they wanted their response to be.

Comments on Individual Questions:

1 (a) This question was well answered with most candidates scoring 2 marks. A very small number only ticked one box which limited them to 1 mark.

(b) Part (i) was answered correctly by most candidates. There was a mixed response to part (ii), but almost all candidates scored at least 1 mark.

2 (a) This sequencing question on how a body maintains a steady temperature was well answered with all candidates scoring at least 1 mark and many scoring 3 or 4.

(b) Part (i) was answered correctly by most candidates whilst many also scored 1 mark in part (ii). The most common incorrect answer to part(ii) was liver. Most candidates scored 1 mark in part (iii) by being able to identify how two or three of the activities would affect the amount of urine produced.

3 (a) Again a very well answered question with only a few candidates not scoring the mark.

(b) This question discriminated well with only good candidates identifying the diagrams that could be chlorine gas.

(c) Very few candidates could recall the formulae of sodium chloride and potassium chloride. Many candidates had not looked up the metal element symbols in the periodic table at the back of the paper so did not recognise them. Others had drawn multiple lines which meant they did not score on this question.

(d) Hazard symbols were well known and most candidates scored 3 or 4 marks.

(e) Few candidates recognised bromine as the element most similar to chlorine. Argon was the most popular incorrect choice though all options were seen.

4 (a) Many candidates identified an element in group 7 having 7 electrons in the outer shell.

(b) Identifying an element with properties similar to sodium proved much more difficult with only some candidates scoring the mark. This links with the poor response to question 3(e). Candidates do not know where to find elements with similar properties in the periodic table.

(c) The majority of candidates could not show the outer shell electron arrangement of the ion, most giving the answer 1 or 7 electrons. A very few did know this very well, even labelling the extra electron and showing the charge on the ion.

5 (a) Most candidates did not know the reason for flame colours. The common wrong answer was 'copper is reacting with chlorine'.

(b) Surprisingly few candidates scored marks on this question which was a pattern matching exercise. All responses were seen.

6 (a) Most candidates could recognise the correct way of calculating speed.

(b) Many less candidates were able to identify the correct speed-time graph. B was the most popular wrong answer though all answers were seen.

(c) Most candidates scored 1 mark on this with either answer being the correct one. Only good candidates completed both sentences correctly.

(d) Many candidates did not know the best reason for wearing a helmet on a bicycle. Most of these incorrect answers opted for a decrease in the kinetic energy of his head as he speeds up.

7 (a) Half the candidates could name the force that pulls a sled down a hill. Most of those giving the wrong answer circled friction.

(b) This was well answered with most candidates identifying the correct calculation.

(c) Another well answered question with most candidates scoring at least 1 mark.

(d) This part of the question was much more difficult. Some candidates lost the mark by drawing multiple lines between the force and its direction and others incorrectly thought the direction of the friction force was down the slope. This links with the wrong answers given in part (a).

8 (a) Candidates found both parts of this question very difficult. Very few could tell when the velocity of the ball was negative.

(b) Only very good candidates scored any marks. Most found it very difficult to visualise and understand. There was much evidence through crossings out of second and even third thoughts about the answers.

A215/02 – Twenty First Century Additional Science A (B4, C4, P4) Higher Tier

General Comments:

There was a good range of marks on this paper, including some very high marks. The entry seemed appropriate for the level of the paper. There was no sign that any candidates were disadvantaged through the typographic errors in Q3 and Q7.
Overall, the Physics questions were less well answered than the Chemistry and Biology questions.

Comments on Individual Questions:

1 Part (a)(i) was better done than part (a)(ii) which was perhaps a little surprising. Part (b) was the least well done, suggesting that some candidates were unclear about the electron structure of ions.

2 This question was generally very well done with most candidates scoring both marks, although part (a) was slightly better answered than part (b).

3 The answers to this question showed some weaknesses from candidates; (a)(i) was reasonably well attempted, but very few candidates were able to pick the correct statement about the reactivity of the compounds of chlorine and iodine in (a)(ii). While part (b) was fairly well answered, parts (c) and (d) were poorly done, with candidates being particularly weak at balancing the equation in (c)(ii) and at writing a balanced symbol equation in part (d).

Unfortunately part c contained a typographical error. The word “oxygen” was mistakenly inserted in the sentence above the equation in (c)(ii). In the markscheme, allowance was made for candidates who tried to balance the equation with O_2 in the right hand side. This benefited some candidates, but most candidates were unable to balance the correctly written symbol equation.

Examiners noticed that very few candidates scored the mark for using the correct state symbols in part (d), and this is possibly an area for future improvement.

4 The question was generally well done, with the majority of candidates scoring full marks on part (a). Parts (b) and (c) were less well answered, but most candidates scored some marks from part (c) by describing parts of the mechanism for heat loss.

5 This discriminated the more able students well. Part (b) was poorly done overall, and many candidates who did score 1 of the 2 marks tended to do so for matching the responses to the correct effects, rather than to the correct stimuli. It was disappointing to see so many higher tier candidates failing to score because they drew lines connecting all of the boxes, and perhaps more care in reading the instructions would have helped some of those.

6 This question was very poorly done, the concept of positive and negative direction seeming to confuse many candidates who gave “when the ball is falling downwards” as their incorrect response. Part (b) was much better answered, with many candidates scoring at least 1 of the available 3 marks.

7 This was generally answered fairly well. Candidates scored best on part (b) which was mentioned in the erratum notice sent out with the paper. The fact that any clear indication of the graph chosen was acceptable for this mark was very seldom called in to play, and there is no sign that the erratum caused any of the candidates any difficulty.

8 This was not well answered by most candidates. The majority of marks gained on this question were from parts (a) and (b), with parts (c) and (d) much less well done. Perhaps more care in selecting and using the correct equation for calculating kinetic energy, which was given at the front of the paper, would help more candidates to succeed in future questions like part (c). More familiarity with the directions of forces and reactions would help with questions like part (d).

A216/01 – Twenty First Century Additional Science A (B5, C5, P5) Foundation Tier

General Comments:

The standard of work seen was similar to that of previous sessions. The total for the paper is 42. The maximum mark scored was 39 marks. One candidate scored 0; otherwise the minimum mark was 6. The mean mark was slightly lower that the previous two sessions.

Questions on some sections of the specification scored worse than others. Question 2 on chemical structure was not answered very well. Question 5 on circuits also proved difficult for candidates. The answers to question 6 on energy transfer, electricity meters and charge showed the least subject knowledge. Parts of question 7 scored poorly, showing poor subject knowledge.

There were very few question sections left unanswered by the candidates in this examination. However there are still some candidates who do not follow instructions given or answer the question asked. Consequently this loses them valuable marks. E.g.

- Question 1(a) where candidates were asked to put a tick on each row; some candidates put more than one tick.
- Question 4 (a) where candidates were asked to write in the boxes. Here a few candidates circled the answers in the list. Those who circled and indicated somehow which box that label went in, scored the mark; others, who only circled the answers, scored no marks.

Many candidates change their mind after writing down an answer. This causes a problem if the first answer is not clearly crossed out. The second answer should be clearly indicated. Ambiguous letters or answers score no marks.

Comments on Individual Questions:

1 (a) Candidates were asked to put a tick on each row. Some put more than one tick per row and hence that row was incorrect. All three rows had to be correct to score 2 marks.

(b) Most candidates identified one person who explained why the sea is saltier than rivers. Common wrong answers were Emily and Robert.

2 Candidates scored in all parts of this question. More gave a correct answer to part (b) than the other three parts.

3 (a) Most candidates knew that copper wires conducted electricity by electrons moving through the wire.

(b) (i) All four letters had to be correct to score 2 marks. Many candidates managed this. There was no pattern to the incorrect answers.

(ii) Many students found this difficult with few circling CDA.

(c) The reasons for using gold-plated contacts was well known and most candidates scored 2 marks.

4 (a) This question scored reasonably well. Some candidates did not follow instructions. They circled the words, lamp and switch, in the list but gave no indication of which box each word should go into and therefore scored no marks.

(b) Few students scored 2 marks here, but most managed to score 1. There was no pattern to the incorrect results.

(c) All alternatives were seen in this section. Some candidates scored 1 mark for knowing that resistors reduce the flow of charge through the circuit.

5 (a) Candidates were not familiar with the symbols of these meters. Also, some candidates did not follow instructions. They circled the letters in the list but gave no indication of which box each letter should go into and therefore scored no marks. A significant number inverted the letters in the circles.

(b) There was a poor response to question. Even the more able candidates did not know that voltage is another word for potential difference. There was no pattern to the incorrect results.

(c) Candidates scored one mark by putting a tick in one or other of the increase boxes.

6 Overall, this question was poorly answered.

(a) A common incorrect answer was that the meter cannot be adapted. Few candidates knew that the joule was a small amount of energy.

(b) (i) The common answer was $\frac{2.1}{3}$ x 8 which was incorrect.

(ii) Candidates found calculating the efficiency of the heater difficult. Alan was the correct answer but Bess and Davina were common incorrect answers.

(c) Very few candidates knew that the meter measures energy transferred as charge passes through it.

7 (a) Information about genes and DNA was clearly not well known. Few candidates scored two marks for genes being made of DNA, and DNA is a set of instructions for making proteins.

(b) Many candidates scored 2 marks here.

(c) The idea that genes that are not needed are switched off was a concept unknown to most candidates. There was no pattern to the incorrect results.

8 (a) Most candidate scored one mark here. The common error was to put D in the meiosis column and B or C in the mitosis column.

(b) There was no pattern to the answers in this question. Scores of 0, 1 and 2 were regularly seen.

9 (a) (i) Some candidates knew that phototropism was the reason plants grew towards the light but more candidates thought it was photosynthesis.

(ii) Almost all candidates knew that plants grew towards the window to get more light.

(b) (i) This was poorly answered. Few candidates scored two marks and a large number of candidates did not score at all.

(ii) The idea of a clone was reasonably well known.

A216/02 – Twenty First Century Additional Science A (B5, C5, P5) Higher Tier

General Comments:

The paper was generally well attempted. All candidates appeared to have time to complete the paper, and very few candidates were entered inappropriately for this tier.

There were many examples of candidates crossing out their original answer and replacing it. This does show that candidates were thinking very carefully about the questions. However, it is important to make the final version clear. It is always safer to write the new answer alongside the old one, not on top of it. Examiners were concerned that some candidates may have lost marks because their intentions were not clear enough to safely give credit.

While candidates often claim to have guessed their answer in an objective paper, those candidates who chose an incorrect answer did so in a far from random fashion.

Candidates clearly demonstrated that that they were thinking about each question.

Comments on Individual Questions:

1 This question is common with the foundation tier.
Almost all candidates showed a good understanding of simple chemical structures and were able to score well. There was some tendency for weaker candidates to mix up the representation of an ionic giant structure with that of the covalent giant structure.

2 (a) Most candidates knew which of the given elements are only present in smaller amounts in the body. However, they were a less certain which elements were very common. Hydrogen was misplaced regularly, and some weaker candidates also suggested that carbon is only present in small amounts. Nitrogen was much more problematic, and examiners allowed it in either column, even though specification statement C5.3.1 clearly indicates that it is not to be regarded as present in only small amounts.

(b) (i) Able candidates realised that a hydrogen was necessary to complete the simplified structural formula of the amino acid. Common mistakes were to put H_2, CH, or CH_2.

(ii) Converting the structural formula to a molecular formula was a task which required careful observation. All candidates attempted this in a sensible fashion, and able candidates got their numbers correct. There were no consistent mistakes, though often at least one of the elements was missing entirely. Examiners accepted the symbols in any order, and some correct responses were bizarre looking formulae.

(iii) Many candidates correctly identified amino acid C as the one which could produce hydrogen sulfide.

3(a) This question was designed to identify which candidates were operating at A* level, and should be read in conjunction with question 4(b). The chemistry specification statement focuses on the structure of a metal lattice in terms of electrons and ions. As the question was asking for the 'best' explanation of conductivity, examiners were looking for the statement linking conductivity to electrons and ions. The more general statement that electrons move between atoms was given credit in question 4(b).

(b) As in previous years, many candidates appeared to be uncertain of the meaning of the term 'state symbol', so gave numbers, element symbols or ionic charges, or even left the question blank. Candidates with a better understanding could suggest plausible state symbols, though perhaps did not notice that the question did tell them that three of the components in the equation were in the molten state. The one symbol that was most well understood was [g], for sulfur dioxide gas.
The most able candidates could use the information given in the question to decide which particular state symbols were most appropriate in this case, though they sometimes seemed unfamiliar with the symbol [l] and used [aq] instead.

(c) As in the previous question, there were three levels of response to this equation balancing task: those candidates who seemed uncertain what to do and so put a combination of element symbols and numbers into the boxes, or even left the question blank; those who realised that the boxes should contain numbers only; and the most able who could specify the correct number to use. The most frequent incorrect numerical responses were 4,2,2 and 2,2,2.

(d) Candidates were expected to assess the merits of the different reasons why gold is used to plate electrical contacts. Most candidates correctly chose the statement that gold is unreactive for the first mark. Candidates who realised that the fact that gold holds its outer electrons weakly is more important for its use as an electrical conductor than the ability to plate it thinly, went on to score the second mark.

4 (a) This question was well answered, with only the weakest candidates choosing an incorrect response.

(b) The vast majority of candidates were aware that an electric current flows through the lamp, with only a few choosing 'voltage'. Slightly more were uncertain whether electrons or atoms were moving. While examiners accepted atoms as being either stationary or oscillating, candidates who suggested that the electrons were oscillating did not gain the second mark.

(c) While many candidates knew that the voltage calculation should be 3.0 x 1.5, weaker candidates often chose the 3.0/1.5 option.

(d) Candidates showed a very good understanding of why a resistor is put into the circuit.

5 This question is common with the foundation tier.

(a) Many candidates knew that energy transfer is measured in kilowatt hours instead of joules because the joule is such a small unit. Candidates who got the answer wrong often went for the second option, so appeared to be thinking carefully about the question.

(b) (i) Candidates found the calculation of cost of electricity to be of similar difficulty to the calculation in question 4(c).

(ii) This was more difficult, with many candidates choosing Davina as their response. Carlos was the least common response.

(c) This was more difficult still, though the common mistakes of 'voltage' and of 'power' again indicated clear engagement with the question.

6 (a) The power of the resistor was something that candidates did not find easy. Able candidates who got it wrong tended to go for 4.0W; weaker candidates were more likely to pick 1.5W.

(b) A small minority of candidates appreciated that both p.d. and current would increase if another cell is added in series. Most candidates thought that one would increase and the other would be unchanged, about half going for each option.

(c) (i) Deciding on the effect of adding a resistor in parallel was something that all candidates found difficult.

(ii) Interestingly, this follow-on question about parallel resistors was answered much better than the previous one. Most candidates realised that both resistors would have the same p.d. across them, and the more able also stated that both would have the same current. The most common mistake was to suggest that each electron goes through both resistors. In order to stretch candidates that little bit further, the question did not state how many responses were correct. However, only a very small minority chose a third response, usually the last option, that each resistor has half the voltage of the battery.

7 This question is common with the foundation tier.
Almost all candidates showed some knowledge of the cell cycle. Response E in part (a) was the most likely to cause confusion. In part (b), most candidates could sequence the statements about the cell cycle correctly.

8 (a) Able candidates showed a good understanding of the statements about DNA. One of the more common mistakes was to think that DNA is only found in cell cytoplasm.

(b) The base sequence was accurately identified by most candidates. Weaker candidates sometimes suggested the second option instead of the third.

9 Most candidates knew that the plant formed from a cutting would be a clone, and many realised that the unspecialised areas are called meristems, though ‘zygote’ was sometimes suggested. However, far fewer knew that the cells grow into root cells when acted on by auxins – many chose ‘light’ as their response instead.

10 This question differentiated well, with able candidates making far fewer mistakes than less able. The most common mistake was to get the third or the fourth statement wrong.

A217/01 – Twenty First Century Additional Science A (B6, C6, P6) Foundation Tier

General Comments:

Many candidates found the majority of items in this paper to be accessible. There did not appear to any significant errors stemming from the misinterpretation of the instructions or rubric within each item.

The candidate scores ranged from 6 to 38 out of a maximum of 42 marks, indicating an appropriate range of performance according to the skills and knowledge of candidates. The candidates appear to have been well-prepared for this paper and very few items were left without a response. Another encouraging feature of candidate responses was noted by the absence of unnecessary comments and calculations around the perimeter of items. Indeed, relatively few attempted to cross out initial responses, indicating that they felt confident in terms of paper content. Finally, there seemed to be little evidence that candidates ran out of time; the items located at the end of the paper were seemingly answered to the same level of success as those towards the start of the paper.

Comments on Individual Questions:

1 (a) Most responses were correct, with very few candidates referring to gamma. The choice of X rays for signal transmission was rarely selected.

(b) This item was challenging with regards to the reflection of microwaves at the dish. A number of candidates considered that such waves were refracted.

(c) Again, many candidates chose responses other than the correct response of 'infrared'. There did not appear to be a clear pattern of alternative responses, but 'ultraviolet' was somewhat popular.

2 (a) Most candidates were familiar with the diagram of electromagnetic spectrum and located UV in the correct box. Some were so confident that they chose to complete all other boxes, which is unnecessary.

(b) The response provided by Bess was understood by a number of candidates, but the popular incorrect alternative was Davina's explanation of longer wavelengths.

(c) Relatively few candidates made the right connections with the model provided. No clear pattern emerged in relation to alternative responses.

(d) Some confusion existed in the context of sound and UV waves. However, many candidates were able to make the correct links between the type of wave and its capacity to pass through different media.

3 (a) A number of candidates selected the correct response of 'wavelength' but some were diverted to think that intensity was the feature of the red/blue light comparison.

(b) The diagrams provided encouraged candidates to select the correct response for reflected light in diagram B.

(c) Some candidates chose 'in series' rather than 'in step' but a number appreciated that interference was taking place and that the intensity of the wave increased.

4 (a) The diagram of the neuron was well understood and the nature of the message was
(b) correctly identified as an electrical impulse.
(c) Although many candidates understood the sequence of events in Jo's eye, some appeared to be somewhat confused. A distinct pattern of alternative responses was not clear.
(d) The link between detection and response to change in the environment was appreciated by many candidates.

5 Many candidates provided the correct response. Those who struggled tended to gain one mark for the link between simple reflex and a baby grasping its mother's finger.

6 (a) It was reassuring to note the confident response of candidates in relation to the features of Alzheimer's disease. For those students who selected only one response, they often obtained one mark for the damage of short term memory shown by Edward.
(b) Again, the cerebral cortex was selected correctly by most candidates. Some chose alternatives, but without a clear pattern.

7 (a) Most candidates successfully identified the correct mass of ingredients removed.
(b) Although many candidates chose the correct response, Elizabeth, some were drawn to select 'William'.
(c) Almost all candidates selected 25%, but some failed to correctly interpret the data provided.

8 (a) Many candidates were able to provide the name for carbon dioxide but many alternative responses were provided for sodium chloride, including sodium chlorine.
(b) This item generated a mixture of responses. Candidates were not entirely confident about the sequence of events taking place during titration.
(c) Many candidates were able to complete parts (i) and (ii) successfully. No clear pattern emerged with regards to alternative responses.

9 (a) A relatively small number of candidates completed the table successfully. Some were tempted to refer to iron in all three boxes, which was credited in the mark scheme for one mark maximum, but a wide range of responses was generated.
(b) Many candidates appreciated that the reaction was measured as a change in pressure.
(c) Some candidates were confident in relation to the topic of change and improvement in reactions, but others gained one mark only for the correct link between use of lower pressure and 'vessels don't have to be as strong'.

A217/02 – Twenty First Century Additional Science A (B6, C6, P6) Higher Tier

General Comments:

Candidates appeared to be better prepared for this paper than they were this time last year. The vast majority of them were able to attempt each part of every question, with no signs of distress or confusion apparent on the scripts. Some earned almost every mark available. Few candidates would have been better served by doing the Foundation Paper instead.

There were almost no new question styles in this paper, so the layout of the paper should have come as no surprise to the candidates. Their exposure to past copies of the exam in the previous weeks had clearly done their job in helping candidates to understand what was required of them, and show them how to make their responses clear. Most candidates adopted good strategies when they needed to change their mind, using clear crossings out to show their revised intentions. In particular, many seem to be aware of the need to indicate clearly to the examiner if the final response has been written outside the answer space, where it may not appear on the examiner's marking screen.

Questions which required factual recall of information proved to be the most discriminating, with only the brightest candidates seemingly able to do this. Centres might want to consider testing this skill more often on the course, to the advantage of their candidates.

Comments on Individual Questions:

1 The question was common to the Foundation and Higher Tier papers. As expected, the vast majority of candidates were able to place UV in its correct place in the electromagnetic spectrum. Candidates were less successful in identifying frequency as being the factor which determines the energy of a photon - even the brightest candidates chose amplitude instead. Similarly, many candidates were confused by the definitions of intensity and frequency. Nevertheless, most candidates scored well on this question.

2 Weak candidates often fail to earn marks where recall of knowledge is required. This was certainly true of the first two parts of this question about interference of waves. The third part required candidates to sequence statements about interference. Although most candidates had no difficulty in identifying the first statement, the last statement was more challenging, and only a minority were able to get the entire sequence correct.

3 As expected, most candidates had little difficulty in identifying the true statements about the behaviour of microwaves. The next part, about why microwaves decrease in intensity as they travel, was more demanding with only the brighter candidates relating it to diffraction. It was disappointing to find that only a minority of candidates knew that infrared photons carry signals down optical fibres, although many worked out that this was to avoid absorption.

4 This was the first of the biology questions. Too many candidates seemed to be thoroughly confused between the roles of the central and peripheral nervous systems, with only a minority able to earn full marks for the first part. On the other hand, almost all of them were able to correctly sequence the actions of the reflex arc responsible for the response of the eye's pupil to changes of light intensity.

5 The first part of this question, which also appeared on the foundation tier paper, provided good discrimination, requiring candidates to recall knowledge of the structure of neurons. However, the vast majority were able to show the direction of the impulse across a synapse. The last part, about the effect of ecstasy on serotonin levels, required recall of knowledge, so only the brightest candidates were able to earn full marks.

6 This question was about memory and reflexes. Most candidates recognised that repeating the same actions lays down new pathways in the brain, but only a few realised that a recognisable pattern helps as well. Unsurprisingly, the vast majority of candidates knew that the brain was responsible for memory. Similarly, most candidates had no difficulty in identifying the type of reflex involved in each of the examples provided.

7 This was the first of the questions about Chemistry. It also appeared on the foundation tier paper. Unfortunately, too many candidates were unable to grasp the context sufficiently to offer a sensible answer for the first part. Similarly, although the majority of candidates could relate the pressure to the strength of the vessels, only a minority linked recycling to waste disposal.

8 This question was about a single reaction, involving calculations and estimates as well as explanations of observations. The first part, balancing the equation, proved more demanding than expected, with only the brightest candidates able to get it completely correct. The calculation which followed was, as expected, largely beyond the abilities of weak candidates, as was the selection of measurements required to determine the purity of the sample. Although the vast majority of candidates were able to correctly estimate the purity of the sample from the data provided, only the brightest were able to calculate the required mass of sodium hydrogencarbonate. Only a minority of even the brightest candidates were able to calculate the rate of reaction from the graph. This was not unexpected. Bright candidates fared better in reading data directly from the graph without any processing for the next part of the question, but too many were unable to identify the best statement for the last part. This suggests that the words ‘frequency’ and ‘rate’ do not appear to be understood in the context of Chemistry by many of even the brightest candidates.

Grade Thresholds

General Certificate of Secondary Education
Additional Science A (Specification Code J631)
January 2009 Examination Series

Unit Threshold Marks

Unit		Maximum Mark	A*	A	B	C	D	E	F	G	U
A215/01	Raw	42	N/A	N/A	N/A	27	23	20	17	14	0
	UMS	34	N/A	N/A	N/A	30	25	20	15	10	0
A215/02	Raw	42	30	26	21	17	13	11	N/A	N/A	N/A
	UMS	50	45	40	35	30	25	23	N/A	N/A	N/A
A216/01	Raw	42	N/A	N/A	N/A	26	22	19	16	13	0
	UMS	34	N/A	N/A	N/A	30	25	20	15	10	0
A216/02	Raw	42	34	30	25	21	16	13	N/A	N/A	N/A
	UMS	50	45	40	35	30	25	23	N/A	N/A	N/A
A217/01	Raw	42	N/A	N/A	N/A	25	21	17	13	9	0
	UMS	34	N/A	N/A	N/A	30	25	20	15	10	0
A217/02	Raw	42	34	30	25	20	15	12	N/A	N/A	N/A
	UMS	50	45	40	35	30	25	23	N/A	N/A	N/A

Specification Aggregation Results

Overall threshold marks in UMS (ie after conversion of raw marks to uniform marks)

	Maximum Mark	A*	A	B	C	D	E	F	G	U
J631	300	270	240	210	180	150	120	90	60	0

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

	A*	A	B	C	D	E	F	G	U	Total No. of Cands
J631	13.6	36.4	45.5	72.7	90.9	100.0	100.0	100.0	100.0	22

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.

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