

Science A
Twenty First Century Science

General Certificate of Secondary Education **J630**

Report on the Units

January 2009

J630/MS/R/09

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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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Chief Examiner's Report

This is now the fifth examination session in which these objective papers have been set, and centres are clearly using past papers to prepare their candidates thoroughly. There are still a few common issues that it is worth reminding centres about, and these are often specific to the tier of examination rather than the unit being examined.

Foundation papers:

- The distracters in these papers are usually more clearly incorrect.
- When instructed to tick two boxes, foundation candidates very often put just one tick. There is nothing to be lost by a guess at the second answer in this case.
- It is often difficult to read what the candidate intends, due to repeated crossing out. Examiners will make every attempt to give credit for what the candidate means, even if it does not follow the instructions exactly. A typical case here occurs when boxes must be joined by straight lines. After repeated tries, some candidates write underneath: 'The two boxes numbered 1 should be joined together, etc.' This will earn the marks if correct. The message to candidates is: if you change your mind, make it clear what your final answer should be.
- Foundation candidates often just do not know the 'recall' parts of the specification.

Higher papers:

- The distracters in these papers are usually all plausible, so candidates must consider each one carefully.
- If it says 'tick **each** box ...', then candidates cannot assume that two marks means two ticks.

As well as the above, it is worth encouraging candidates to bring a ruler and a calculator to all science examinations. Where lines were drawn to link boxes or to complete graphs and chart, they were occasionally extremely hard to see. Centres should remind candidates that scripts are scanned as black and white images, so the use of coloured pens or faint pencil is not recommended. In some instances, partially rubbed-out pencil lines were still visible. There was clear evidence in both foundation and higher papers that questions involving calculations were either omitted or done without a calculator. While the calculations needed are not complicated at GCSE level, managing without a calculator does produce extra places where errors can occur, and creates more difficulties for the candidates.

The Principal Examiners' reports which follow indicate

- gaps in factual knowledge,
- common errors which reveal misconceptions, both in *Ideas about Science* and in *Science Explanations*, and
- places where the candidates did not follow the instructions in the questions.

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.

A211/01 – Twenty First Century Science A (B1, C1, P1) Foundation Tier

General Comments:

Candidates showed good use of time. There were very few 'no responses'. Most candidates showed good examination technique by making guesses where they were unsure.

It was a relatively common error for candidates to show only one response in part questions where it was necessary to make two responses, e.g. put ticks in the boxes next to the two correct answers. It is the usual policy to tell candidates very clearly how many responses have to be made, and candidates need to make sure that they are not losing marks by omitting to follow this guidance.

Comments on Individual Questions:

- 1
 - (a) An easy introduction to the paper, almost all candidates knew that the nucleus contains chromosomes.
 - (b) Very few candidates knew that eggs and sperm have only have one copy of the sex chromosomes. Most candidates chose '23'.
 - (c) Some candidates correctly knew that asexual reproduction involves only one parent, but many were confused by the fact that the offspring were all the same sex.
 - (d) Most candidates knew how to fill in the boxes, but some missed the gap for 'Male' on the right. Some correctly identified the 1:1 ratio of male to female, but all choices were seen.
 - (e) Of those candidates who knew that the sex chromosomes in males and females are XY and XX, many wrote them in the wrong order.

- 2
 - (a) True/false questions are difficult, because the candidates do not know how many statements are 'true' or 'false'. In this case, most candidates were very confused about which was the larger structure, DNA or the chromosome. Very few candidates scored 2 marks.
 - (b) Candidates showed good skills of identifying environmental factors, many gaining a mark.
 - (c) Talking heads are popular questions with candidates. Most gained at least one of the two available marks for sorting out the arguments into 'for' and 'against'.

- 3 Sometimes questions involve selecting from lots of boxes. Candidates get very used to joining boxes and many of them tried to join all the boxes instead of selecting the relevant two. In this case, most knew that it was important that cells could grow into new tissue types, but very few knew that stem cells are unspecialised.

- 4
 - (a) Most candidates knew that air pollution in towns would be reduced if electric cars were used, but many chose the wrong answer that stated that less fossil fuels would be burned in power stations.
 - (b)
 - (i) This question proved surprisingly difficult – only about half the candidates identified hydroelectric power as causing least air pollution.
 - (ii) This was a two mark question. Some candidates only chose one box. Some did not read the question carefully – it asked about reducing the amount of electricity. Many chose wrong answers such as 'travel by public transport' or 'walk to work', which would reduce Joe's total energy use, but not his use of electricity.

Report on the Units taken in January 2009

- 5 (a) A surprising number of candidates did not know the percentages of the gases in the air. Strangely, it was often argon (1%) which gained a single mark.
(b) Most candidates correctly identified the structure of carbon dioxide from the list.
(c) Very few candidates knew that water is produced when hydrocarbons burn. 'Hydrogen' was a popular incorrect choice.
- 6 (a) Many candidates correctly identified 'Bridge St' from the information in the table. Fewer were able to correctly link a reason for their choice.
(b) Most candidates knew what a range was, but some made small errors in giving the range, e.g. starting at 75 rather than 70. Some incorrectly gave the time range, implying that they did not understand that the question was asking about concentration.
(c) Most candidates were able to identify at least one statement that gave a correlation, but in (ii), very few were able to identify which statement gave a cause.
- 7 (a) Talking heads again, so these questions gave statistics that showed high facility. Candidates engage well with this question style. Most correctly identified 'Edward' as talking about small asteroids.
(b) Again, this question was well answered. Those candidates who did not gain two marks often made the mistake of only making a single choice, despite the question clearly asking for two.
(c) Another high scoring talking head.
(d) This question proved more problematic – candidates had to choose three astronomers. Again, many did not make enough choices and those who did could not always identify those who were justifying reasons for research.
- 8 Candidates were not generally able to link hydrogen and helium with their descriptions. In this case, some of the answers could be worked out from the passage above, so it was a pity that candidates did not use that information.
- 9 (a) Most candidates knew that Wegener was responsible for the theory of continental drift, but Darwin was a popular incorrect choice.
(b) (i) A and D were not always chosen, even though they were the only mountains shown bordering oceans.
(ii) Surprisingly, again not all candidates could identify a mountain chain within the land masses.
(c) (i) Most candidates identified 2 and 4 (South America and Africa) as once having been joined together. Some gave letters, rather than numbers, which were not continents.
(c) (ii) Almost all candidates gave the correct response, 'fossils'.

A211/02 – Twenty First Century Science A (B1, C1, P1) Higher Tier

General Comments:

The paper had a similar mean to that in January 2008 and a wide spread of marks allowing good differentiation. The level of difficulty was appropriate and candidates are clearly being well prepared for this style of paper. Centres are reminded that candidates must answer unambiguously, particularly when making corrections. To be sure of gaining marks and that it is necessary to follow the rubric precisely, it cannot be assumed that the number of marks dictates the number of responses.

Comments on Individual Questions:

- 1 (a) (i) This question was well answered with candidates showing familiarity with the genetic cross diagram and good understanding of genetic crosses.
(a) (ii) In the main, this was well answered but with a wide variety of quoted ratios, e.g. 2:2 or 50:50, rather than the simplest 1:1. All correct ratios or fractions or percentages were credited.
(b) This proved to be a difficult question with few candidates able to apply their knowledge of asexual reproduction to this unfamiliar but real circumstance.
(c) Some candidates answered in terms of sex chromosomes from Komodo dragons rather than humans; others answered 23rd chromosome rather than Y. Only the best candidates knew that male sex hormone causes the development of testes and that a lack of this hormone results in ovaries developing; weaker candidates tended to restate the information in the question stem.
- 2 (a) Candidates showed a degree of uncertainty about genes, DNA and the function of genes with many candidates gaining only one of the two available marks. Some candidates lost marks here through ambiguous T and F responses where their true intentions could not be determined.
(b) Most candidates correctly identified diet as the environmental factor that could play a role in the development of diabetes.
(c) Mostly well answered. Candidates showed better knowledge of pre-implantation genetic diagnosis than gene therapy and therapeutic cloning.
(d) Well answered, with candidates showed an impressive understanding of the false positive and false negative genetic test results.
- 3 (a) Candidates largely knew and understood the term hydrocarbon.
(b) This proved to be a difficult question, but discriminated well. Candidates mostly drew carbon dioxide accurately but were less certain about water, often drawing this with one hydrogen atom and two oxygen atoms; many candidates failed to use the symbols given for carbon, oxygen and hydrogen. Balancing the equation proved hardest of all but was well done by the best candidates.
(c) Most candidates knew that carbon monoxide was produced by burning hydrocarbons without sufficient oxygen but relatively few could suggest the second product of this reaction, carbon.
(d) The role of photosynthesis in reducing atmospheric carbon dioxide levels was well recognised but the role of oceans in dissolving carbon dioxide was much less well known.

Report on the Units taken in January 2009

- 4 (a) Candidates have clearly been well taught about data and could correctly identify the range.
- (b) (i) Many candidates correctly identified the correlations but E, the reaction of nitrogen
(ii) monoxide with atmospheric oxygen to produce nitrogen dioxide, was a strong distracter; consequently many candidates failed to give E as the answer to part (ii) of the question.
- (c) Some candidates failed to read the rubric and used more than one line between boxes, so losing marks. Good candidates correctly identified the real difference in nitrogen dioxide levels between Bridge Street and Mill Street and then chose the correct explanation scoring two marks; one mark responses were rare. These are sophisticated ideas and it is gratifying to see candidates able to deal with them successfully in exams.
- 5 This question was well tackled by the candidates, the majority of whom read the questions carefully and answered with the appropriate number of ticks in each part of the question. They also showed themselves capable of assimilating and understanding the information about asteroids provided.
- 6 Candidates generally gained a mark for recognising that helium was present in the universe before stars formed but fewer knew it was also produced in stars. The role of hydrogen as the Sun's "fuel" was also not well known.
- 7 (a) (i) Most candidates identified the mountain range formed by collision between
(ii) continents, i.e. the Himalayas, but were less certain about those formed when continents push through oceans.
- (b) South America and Africa were well identified as being likely to have similar fossils.
- (c) Most candidates scored at least one mark and showed familiarity with, and understanding of, the evidence for seafloor spreading.

A212/01 – Twenty First Century Science A (B2, C2, P2) Foundation Tier

General Comments:

The performance on this paper was very similar to that in previous sessions. There was no evidence from the item level data that candidates were short of time.

A significant number of candidates bring neither a ruler nor a calculator to their exams. While neither is strictly necessary, joining boxes or drawing bar charts are much easier to do with a ruler, and calculation of a mean without a calculator proved taxing for many.

In a few places, candidates ticked only one box, even though the question instructed them to tick two; they should realise that even a guess is better than no response. When candidates change their minds about their answers, they must make it clear what the final choice is. Examiners will make every effort to give credit for the candidate's final thoughts, but this is sometimes hard to do, when lines joining boxes are crossed out and replaced, or when a number of ticks with different degrees of smudginess are seen.

Comments on Individual Questions:

- 1 Most candidates scored well on part (a), although a surprising number thought that silk was synthetic. In part (b), most linked the box 'small molecules can be joined' to 'polymers', although only about 40% were completely correct. In (c)(iv), the fact that the synthetic material was transparent was a popular distracter, even though the material it replaced was also transparent.
- 2 45% of the candidates realised that the variability in the data was most likely due to different starting temperatures. Most could find the range of the data, but calculating the mean proved harder. A surprisingly large number of candidates do not bring a calculator or a ruler to the examination; although not strictly necessary, it is a great help in questions such as this.
- 3 Answers to parts (b) and (c) showed that most candidates had understood the article well, but most had difficulty extracting the correct terms in part (a). The commonest answer for (a)(iii) (for which 'reflects' was the correct answer) was titanium dioxide. As this is the white powder which reflects UV, this was allowed.
- 4 Part (a) was well done, but identification of a correlation, and recognising whether the outcome is caused by the factor, proved difficult for most candidates.
- 5 The factual recall in (a) was generally good, and over half of the candidates correctly interpreted the graph in (b)(i) correctly. The box-linking in (b)(ii) was poorly done, and many candidates did not understand what the question was asking them to do.
- 6 Although a disappointing number of candidates thought that antibiotics can kill viruses, this question was well done by most.
- 7 Peer review was poorly understood by most candidates, although most were very clear about the lifestyle factors which affect the risk of heart disease. A few did get the columns reversed in part (b) (and this happened also in a similar table in question 1) showing the need to look carefully at table headings and the instructions for the task.

A212/02 – Twenty First Century Science A (B2, C2, P2) Higher Tier

General Comments:

This 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 so all candidates could 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 managed their time effectively and were able to complete the paper.

Most answers were clear and easy to mark but there are still examples of where candidates failed to score marks because answers had been changed and their final response was ambiguous. On scanned scripts it can be difficult to be sure what answer was intended unless candidates make changes carefully and clearly. Different coloured pens are all black on scanned scripts and rubbed out pencil lines may still show up.

Most candidates followed the question instructions carefully, but some still do not read the questions well enough when a stated number of responses (ticks or lines) is needed.

Comments on Individual Questions:

- 1 This question was on data analysis and most candidates gained the majority of the marks.
 - (a) These were common questions with the foundation tier. Higher level candidates
 - (b) found them straightforward, most gaining all four marks.
 - (c)
 - (i) Many candidates put lines in the correct places for 2 marks. The main error was to choose the opposite effect (increasing or decreasing the time taken) to the correct one.
 - (ii) This was not well known. Many candidates did not know if the data suggested a real difference between the properties of fleece and wool. The most common wrong answer was that there is a difference because the mean values are different.

- 2
 - (a)
 - (i) Most candidates scored 1 mark for this question with many being able to put together both statements that explained the difference in melting points for 2 marks.
 - (ii) This question was much more difficult as few candidates had a clear idea of how polymer properties are modified. This was the question on the paper that was most commonly left blank.
 - (b)
 - (i) This was another question about modification of polymers. Few candidates knew that plasticizers make polymers more flexible.
 - (ii) This also proved very difficult. Candidates did not understand how changing the product made from a material changes its LCA. Most thought the resources needed to make PVC or the disposal of PVC would make a difference to the LCA of the products.
 - (iii) This was easier with most candidates scoring 1 mark and many 2 marks.

Report on the Units taken in January 2009

- 3 (a) Although both the answers to this question were found in the article only half of the candidates scored 2 marks. Candidates should know that if they are asked to read an article it will be used in the questions that follow.
- (b) Many candidates found this sequencing question straightforward and scored 2 marks.
- (c) Very few candidates had a clear idea about ALARA and precautionary principles and how they should be applied. A small number of candidates mixed up the two but more often two choices of incorrect numbers were given.
- 4 (a) This was another overlap question with the foundation tier. It proved straightforward for higher tier candidates and most scored 2 or 3 marks. The most common error was thinking that only Dr Round claimed there was evidence for changes in the Earth's temperature when both scientists claimed this.
- (b) This was a discriminating question with candidates scoring across the range of marks. Candidates found it easier to recognise correlations between factors and outcomes than to recognise when a factor had caused an outcome.
- (c) A challenging question with many candidates failing to remember that scientific explanations are tested by comparing predictions made from them with data from observations.
- 5 (a) This question was answered well. Most candidates were able to correctly complete one of the sentences and many could complete both.
- (b) Again an overlap question though this proved more difficult than usual for the higher tier. A complete range of answers was seen but the most common error was that candidates thought that the microorganism was not recognised.
- 6 (a) Two more overlap marks here, with most higher candidates scoring 1 mark. Commonly one of the two correct 'evaluate' statements would be chosen together with the incorrect choice of repeating the results.
- (b) This was another question that discriminated well. Good candidates scored 3 marks whilst the most common mistake amongst less able candidates was to mix up the first and fourth benefits which reduced their score to 1.
- 7 (a) Most candidates correctly identified viruses. Those who failed to score often misunderstood the question and gave examples of disease-causing microorganisms.
- (b) (i) The first two parts of this question were understood and well answered by the majority of candidates, many of them scoring 2 marks.
- (ii) Few candidates scored well on this part because they failed to follow the instructions and attempted to join each left hand box to one on the right. Candidates should take particular care reading the instructions on questions that require lines to be drawn between boxes. Some need lines drawn from each box, as in question 6(b), whilst others only need a single line to make a correct statement or link as in questions 5(b) and 7(b)(iii).
- (c) Many candidates correctly identified why new antibiotics are needed. The most common wrong answer was that antibiotics produces resistance in microorganisms.

A213/01 – Twenty First Century Science A (B3, C3, P3) Foundation Tier

General Comments:

Candidates are clearly now well prepared for this type of objective question paper; there was no evidence that candidates were short of time and there were relatively few no responses to any questions. 'No response' was most common where calculations were required and this may indicate that the candidates did not have access to a calculator. The paper discriminated well and allowed all candidates to demonstrate their knowledge and understanding. Candidates should be aware that as the scripts are scanned it is important that any corrections or changes made to answers need to be clear and unambiguous if they are to gain credit.

Comments on Individual Questions:

- 1 This was a well answered question. In part (a), producing less power was a surprisingly powerful distracter, in part (b) most candidates were clear that carbon dioxide is produced by the burning of coal, and in part (c) the costs of decommissioning nuclear power stations were less well known than the risk of accidents.
- 2 (a) (i) Reading the average yearly radiation dose proved difficult for weaker candidates who often answered 1.5 rather than 1.6.
(ii) Most candidates were clearly familiar with the concept of a range. However, mistakes were often made in giving the lower figure as 0.5 or 0.65.
(b) (i) The term "outlier" was poorly known with many wrong alternatives being given.
(ii) Most candidates could identify the possible cause for Grant's high reading.
(iii) Many candidates were unable to calculate the best estimate or mean, either making no attempt or merely adding the values together.
- 3 (a) Even the better candidates often failed to recognise that in this case the benefit outweighed the small risk.
(b) Few candidates showed an understanding of either half life or the effect of increasing distance on the radiation dose received.
(c) This was answered better with the majority of candidates recognising that more frequent exposure to radioactivity increased risk.
- 4 (a) This was well answered with most candidates gaining at least one mark for realising that environmental conditions had changed.
(b) Most candidates were familiar with the idea that all hominid species except our own are extinct. However the terms common ancestor and the idea of divergence were much less well known.
- 5 This was well answered; candidates showed a good understanding of the need for replication and many also knew that only genetic variation can be inherited.
- 6 (a) (i) This question discriminated well with only the best candidates recognising both data
(ii) and an explanation from the information provided about clouded leopards.
(b) A number of candidates lost marks by trying to link each term to more than one definition. Sustainability was correctly understood more often than biodiversity.
(c) This was well answered by candidates of all ability levels, suggesting that ideas of natural selection and selective breeding are well understood.

Report on the Units taken in January 2009

- 7 (a) Candidates were clearly more familiar with the elements present in carbohydrates than proteins. That nitrogen is present in protein was recognised by most candidates but few also knew that oxygen is also always present.
(b) Virtually all candidates managed to score at least one mark of the three available and most gained all three marks for what is a quite difficult set of ideas.
- 8 Understanding the information presented and choosing the correct “talking head” discriminated well.
- 9 The role of preservatives in part (a) and the Food Standards Agency in part (c) were well known, but that E numbered additives have passed a safety test in part (b) was much less well known. Candidates for the most part understood how the labelling of food can help parents reduce risk to their children with very few failing to gain at least one mark.

A213/02 – Twenty First Century Science A (B3, C3, P3) Higher Tier

General Comments:

The performance on this paper was very similar to that in previous sessions. There was no evidence from the item level data that candidates were short of time.

A significant number of candidates bring neither a ruler nor a calculator to their exams. While neither is strictly necessary, joining boxes or drawing bar charts are much easier to do with a ruler, and calculation of a mean without a calculator proved taxing for many.

In a few places, candidates ticked only one box, even though the question instructed them to tick two; they should realise that even a guess is better than no response. When candidates change their minds about their answers, they must make it clear what the final choice is. Examiners will make every effort to give credit for the candidate's final thoughts, but this is sometimes hard to do, when lines joining boxes are crossed out and replaced, or when a number of ticks with different degrees of smudginess are seen.

Comments on Individual Questions:

- 1 The most powerful distracter seemed to be the 5th one, that gamma radiation goes straight through the body without harm (if that were the case, then it would not be hazardous in any circumstances), rather than the balance of risk and benefit which was intended.
- 2 Markers often had difficulty in seeing the candidates' bars on the bar chart, as they were drawn extremely faintly. Although high precision was not expected, the use of a ruler would have been helpful.
As in last June's examinations, it was noticeable that candidates will not spot an outlier unless they are directed towards it. On a higher tier paper, they must expect to have to find that without prompting, and to discard it in finding the mean. Partial credit was given for candidates who took the mean off all 7 doses.
- 3 Most candidates gained about half marks here, with very little discrimination between the most and least successful candidates over the paper as a whole.
- 4 This question, on the acceptance and rejection of scientific theories, scored quite highly. Candidates who opted for the last response ('Other countries that did not use Lysenko's theory were growing more crops') were given credit, although it was not one of the two best scientific reasons.
- 5 The first part here, asking for the term 'homeostasis', was the one part of the paper where a significant number (26%) made no attempt at all. Mis-spelling was not penalized, as long as it was clear that homeostasis was intended. In part (b), many candidates lost the mark for putting 'spine' instead of 'spinal cord'.
- 6 In part (b) a number of candidates lost marks by not following the instructions to join each term to its (one) correct definition. In (c)(i) many candidates did not give a type of cell, as prompted, but terms such as genes, nucleus or DNA. Answers to (c)(ii) were not significantly better than chance.
- 7 This was well answered by the majority of candidates.

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- 8 This question revealed a lack of understanding of the term 'element' by many candidates. There were four acceptable answers to the three processes involving bacteria, and two to the one process involving the formation of amino acids.
- 9 This was well answered, but only 25% of candidates managed to find the three components of the risk assessment in part (b).

Grade Thresholds

General Certificate of Secondary Education
Science A (Specification Code J630)
January 2009 Examination Series

Unit Threshold Marks

Unit		Maximum Mark	A*	A	B	C	D	E	F	G	U
A211/01	Raw	42	N/A	N/A	N/A	28	24	20	16	12	0
	UMS	34	N/A	N/A	N/A	30	25	20	15	10	0
A211/02	Raw	42	32	28	22	17	14	12	N/A	N/A	N/A
	UMS	50	45	40	35	30	25	23	N/A	N/A	N/A
A212/01	Raw	42	N/A	N/A	N/A	31	27	23	19	15	0
	UMS	34	N/A	N/A	N/A	30	25	20	15	10	0
A212/02	Raw	42	32	28	22	16	11	8	N/A	N/A	N/A
	UMS	50	45	40	35	30	25	23	N/A	N/A	N/A
A213/01	Raw	42	N/A	N/A	N/A	29	24	20	16	12	0
	UMS	34	N/A	N/A	N/A	30	25	20	15	10	0
A213/02	Raw	42	33	29	23	17	12	9	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
J630	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
J630	0.4	4.9	23.1	56.2	77.5	89.9	96.4	99.6	100.0	445

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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