

Science B (Gateway)

General Certificate of Secondary Education **GCSE J640**

Report on the Units

January 2007

J640/MS/R/07J

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Mark schemes should be read in conjunction with the published question papers and the Report on the Examination.

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GCSE Science B (Gateway) J640

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Gateway Science Report on the B621 /01 (B1, C1, P1)

General Comments

This was the first time the new Gateway Science had been examined. Candidates scored very well at the lower end of the ability range, but there appeared not to be the corresponding improvement at higher level.

The foundation paper attracted an entry of just over 20 000 candidates. The paper was at an appropriate level and a wide range of marks were seen from very weak to very good. There was no evidence that candidates ran out of time and all three sections appeared to be of equal difficulty. Examiners were pleased to see straight lines being drawn with a ruler and an attempt being made at most questions by candidates of all abilities. The use of online marking with the random selection of scripts made it impossible to assess if misconceptions were centre dependent.

Comments on Individual Questions

Section A

Q 1)

- (a) This question proved surprisingly difficult for a significant number of candidates. It had quite difficult words for weak candidates and it was obvious that many had just guessed an answer. A large number of 'eyes' were in evidence for receptors, suggesting that this had been answered without linking it to the stem of the question.
- (b) The vast majority of candidates got the "quick" mark but few managed to get the second mark for saying it happened automatically or without thinking.
- (c) This part was badly answered.

Q 2) This question was answered well by most candidates.

- (a) Most candidates gave the correct answer to part (a).
- (b) In part (b) many correct answers were seen. For those who failed to score 2 marks, many correctly identified Liz as having the fastest rising blood sugar, but did not show that they had used the GI numbers as required by the question. A significant number of candidates thought that the GI rating was a measure of sugar content. Several candidates wrote about increasing blood pressure rather than blood sugar – examiners ignored this error.
- (c) The better candidates scored full marks but weaker ones mixed up organs and hormones and a surprisingly large number of students gave testis and testosterone as the answers.

- (d) Part (d) was poorly answered – a few candidates realised that the process happened in the small intestine but the majority did not explain how. Examiners were looking for absorption or diffusion.

Q 3)

- (a) The majority of candidates scored full marks on this section.
- (b) A large number of candidates mixed up DNA and genes. The most common correct answer was nucleus.
- (c) There were many vague answers which failed to score. Candidates were expected to say that some DNA/genes/chromosomes came from the mother for part (i) with a similar answer about the father in part (ii) however many candidates wrote that some characteristics came from the father in part (ii) which was an incomplete answer.

Section B

Q 4)

- (a) Many candidates scored full marks on this part, but several tried to give the ingredient a name, which usually meant it was wrong.
- (b) Part (b) was usually correct.
- (c) Quite a few candidates gave no response to this question and many found difficulty in transferring correct information from the question into the boxes. The most common error was **hydrocarbonate** instead of **hydrogencarbonate**.

Q 5)

- (a) About half the candidates gained the mark for this question, A being the most common wrong answer.
- (b) The vast majority of candidates scored full marks on part (b) and quite a few added “only” to the end of their answer. There were several candidates who just put H and C as answers, which failed to score.

Q 6)

- (a) Part (a) was generally well done with the majority scoring 2 marks.
- (b) Most candidates gave “pleasant smell” as the answer to part (b). A common error was to use “irritant” in the answer although this had been excluded by the question.

Q 7) This question was not answered very well.

- (a) Vague answers in part (a) such as “pollution” were common and the majority of marks were given for a ‘causes litter’ type response or ‘not rot’.

- (b) Part (b) usually scored a mark for “does not smash” but the majority struggled to find another property despite there being a wide range as detailed in the mark scheme.

Q 8)

- (a) Candidates generally got part (a) correct.
- (b) Candidates struggled to give a correct response to part (b). A significant number of candidates repeated the two answers in the question.

Q 9) Most candidates got thermometer for the instrument X, gave the correct colour for the flame and were able to calculate the correct temperature change leading to a correct answer in (c)(ii). In part (b), blue was the most popular incorrect colour.

Section C

Q 10) This question was well answered although some candidates re-wrote baked potato in the warm up column. One or two candidates ignored the pictures and made up their own foods – this did not score.

Q 11) Generally well answered with windows and double glazing being the most popular answers to parts (a) and (b).

The majority of candidates were able to calculate the payback time correctly. Very few, however, showed any working at all, which meant that those who made an arithmetic error had no chance of picking up a working mark. Candidates would be advised to show some working to allow these marks to be awarded.

Q 12) This proved to be one of the worst answered questions on the paper. Part (a), graded a level G question by the examiners, produced a sprinkling of all the answers. Candidates did not seem to know what wavelength meant and 9 cm was the most common answer for part (b).

Q 13) This was well answered with the majority of candidates scoring full marks on this question.

Q 14) Candidates seemed to have difficulty deciding how to answer this question. They often described evidence for global warming like increasing temperatures rather than causes. The most marks were awarded for ice at the poles melting. Some mentioned greenhouse effect, but did not say that it is increasing or why it is increasing. A significant number of candidates thought it was related to the ozone layer, losing all their marks for this question.

Q 15)

- (a) Part (a)(i) was answered correctly by the majority of candidates, but many responses named electromagnetic waves. In part (ii) few candidates were able to describe a digital signal.
- (b) Part (b) was well answered with most candidates giving a correct response for part (ii).
- (c) In part (c) a large number of correct answers were seen. The main errors were (i) candidates did not continue the ingoing ray as a straight line, (ii) there were too many reflections which made the angles of incidence and reflections significantly different (iii) careless or no use of a ruler which made it difficult to score full marks. Candidates cannot have any excuse for failing to use a ruler as one should be provided by the centres, it being clearly listed in the additional materials.

Gateway Science Report on the B621 /02 (B1, C1, P1)

General Comments

This examination was the first Higher Tier examination paper for the new GCSE Gateway Science B suite of specifications taken by candidates. Centres entry policy was very well targeted with only a very small proportion of candidates whose performance suggested that they should have taken the Foundation examination paper.

The mean mark for the examination paper was 34.3 and the highest mark awarded was 59 out of 60. The examination successfully discriminated between the target grades (A* to D). The examination paper allowed candidates to effectively demonstrate their understanding of scientific principles. In addition there were opportunities for candidates to evaluate and interpret data, communicate scientific ideas and to describe some of the implications of science.

Statistical analysis shows that Section A (Sc2) was the most demanding section and Section B (Sc3) the least demanding. Nevertheless the same statistical analysis demonstrated that all three sections discriminated equally well.

Comments on Individual Questions

Section A

Q 1) This question was focussed on sugar.

- (a) In Q.1(a)(ii) glucose was the most frequently quoted correct answer. Common wrong answers included castor sugar and granulated sugar. In Q.1(a)(ii) a small but significant proportion of candidates gave fats as the food type rather than carbohydrates.
- (b) To be awarded two marks for Q.1(b) candidates had to calculate the two GI values. Candidates that just made a correct comment without using the GI values were only awarded one mark. Almost all candidates were awarded at least one mark.

- (c) Although Q.1(c) was targeted at standard demand and was a common question with the Foundation Tier it was poorly answered by most candidates. To obtain two marks candidates had to refer to absorption or diffusion and only a very small proportion of candidates did so. Candidates were more likely to be awarded a mark for referring to the small intestine than mentioning diffusion. Common misconceptions included the idea that the absorption of sugar occurs in the liver or the large intestine.
- (d) Although the majority of candidates in Q.1(d) realised there was a link between insulin and sugar, only a much smaller proportion actually made the correct link to blood sugar levels. Very few candidates gave answers relating to the conversion of glucose to glycogen. A common misconception was that glucose was broken down rather than being converted.

Q 2) This question on genetics was the least demanding overall question in Section A even though it included three part questions targeted at high demand.

- (a) Q.2(a)(i) and Q.2(a)(ii) were marked independently but in both parts candidates had to refer to some sort of genetic material (DNA, genes or chromosomes) to be awarded a mark. In Q.2(a)(i) genetic material had to come from Grace and in Q.2(a)(ii) from Rick. The most common error was to refer to characteristics rather than genetic material.
- (b) In Q.2(b) many candidates realised that the presence of a Y chromosome was needed for a male baby but fewer candidates could clearly explain why there was an equal chance. Candidates had to specifically refer to the ratio of XX to XY chromosomes.
- (c) Although Q.2(c) was targeted at high demand many candidates were able to draw a punnet square and calculated the correct probability as 0.25. 25%, 1 in 4, $\frac{1}{4}$ and 1:3 were all allowed but the ratio 1:4 was not.
- (d) In Q.2(d) only a small proportion of candidates gave two different answers. Most candidates referred to the chance that another baby could have the disorder or carry the disorder. Only an extremely small number of candidates considered the dilemma of parents as to whether to have an abortion or the possible stress on the parents.

Q 3) This question on malaria was found to be the most difficult overall question on the examination paper.

- (a) In Q.3(a) many candidates put A rather than C.
- (b) Although in Q.3(b) low level responses such as use a mosquito net, cover skin up and use malaria tablets were all given credit a large proportion of candidates referred to vaccinations.
- (c) Very few candidates could answer Q.3(c).

Section B

- Q 4) This question focussed on the items regarding cooking chemistry and food additives.
- (a) In Q.4(a) the vast majority of candidates were able to identify E153 or E104 as being food additives.
 - (b) A significant proportion of candidates in Q.4(b) were not able to write the word equation for the decomposition of sodium hydrogencarbonate. The most common misconception was to write sodium hydrocarbonate. Very few candidates tried to write the symbol equation.
 - (c) Some excellent answers were seen for Q.4(c) with good clear diagrams that indicated the attraction between the hydrophobic end with oil molecules and the hydrophilic end with water molecules. Credit was not given for stating that hydrophobic was oil loving or water hating and that hydrophilic was water loving. Candidates had to imply or state that there was an attraction between the hydrophilic end and water and between the hydrophobic end and oil.
- Q 5) This question was about displayed formulae.
- (a) In Q.5(a) most candidates could identify B as C_2H_6O .
 - (b) In Q.5(b) just over half of the candidates could identify A as an alkene. Compound C an alkene was the most effective distracter.
 - (c) In Q.5(c) almost two thirds of the candidates could identify E as the addition polymer.
 - (d) In Q.5(d) just over half of the candidates could identify C as the unsaturated hydrocarbon. Compound A was the most effective distracter.
- Q 6) This question was focussed on polymers and their properties.
- (a) In Q.6(a) the mark scheme included a comprehensive list of properties needed for the panes in a greenhouse. The most common correct properties were the idea of a thermal insulator and the plastic does not break. A common misconception was to include it lets light in but this had already been included in the stem of the question.
 - (b) In Q.6(b) most candidates were awarded at least one mark. The most common distracter was that Gore-Tex[®] was made of polyester and PTFE.
- Q 7) This question was focussed on energy and fuels.
- (a) In Q.7(a) many candidates gave the correct response exothermic. A significant proportion of candidates put endothermic or convection.

- (b) The mark scheme in Q.7(b) gave a comprehensive list of factors that needed to be considered for the fuel in the diesel locomotive train. Nevertheless a considerable number of candidates gave cost and pollution which were given as examples in the question. Despite this candidates often gave more than two responses and so were still able to score the maximum of two marks for this question. The most popular answers were the idea of availability, the idea of energy or fuel efficiency and the idea of storage.
- Q 8) This question involved the complete and incomplete combustion of methane. There was a small proportion of candidates that did not attempt either one or both parts of this question.
- (a) Although in Q.8(a) the equation needed to solve this calculation was listed in the physics equations on page 2 of the examination paper it was clear that a significant proportion of candidates did not realise this. One common misconception involved using the highest temperature rather than the temperature change. Full marks were awarded for the correct answer 8400 J even if it was not accompanied by working out.
- (b) Only an extremely small proportion of candidates were able to balance the complete combustion of methane in Q.8(b) although the majority of candidates did get one mark for writing the correct reactants and products.

Section C

- Q 9) This question was about waves.
- (a) Despite being a question that was common to the Foundation Tier Q.9(a) was the most difficult on the paper in terms of the response from candidates. Only a very small proportion of candidates got the correct answer of 3.6 cm. A huge variety of other answers were obtained including 3 cm and 6 cm.
- (b) Most candidates gave a piece of equipment that uses wireless technology. The internet was not awarded a mark since it is not a piece of equipment.
- (c) In Q.9(c)(i) many candidates were able to describe a digital signal as one that had two values. Normally the two values were described as on or off or 0 and 1. Some candidates misunderstood the question and gave an advantage or a use. In Q.9(c)(ii) although many candidates were able to give an advantage of a digital signal in terms of less interference a common misconception was that the signal was faster.
- (d) Many candidates used the diagram in Q.9(d) to explain their answer. Candidates drew satellites or the ionosphere and then showed the path of the radio signal. Two common misconceptions were that a radio signal is reflected off a satellite and that a radio signal is refracted by the ionosphere.
- (e) Q.9(e) was also set on the Foundation tier paper. Candidates in the Higher Tier often scored two marks with well drawn diagrams. The most common misconceptions were to have changes of direction not at the surface and to have too many reflections within the optical fibre.

- Q 10) This question was about energy transfer and insulation in the home and was the easiest overall question in Section C.
- (a) In Q.10(a) most candidates were able to recognise conduction and convection but less could fill in the third blank with less dense.
 - (b) Almost every candidate in Q.10(b) could work out the pay back time as 2 years.
- Q 11) This question was about energy transfer and was the hardest overall question in Section C.
- (a) Almost all the candidates were able to state the correct response in Q.11(a).
 - (b) In Q.11(b)(i) the answer was W but a significant proportion wrote Y.
 - (c) The marks for Q.11(b)(ii) were awarded for the explanation. Candidates that did not choose Y were not given any credit for subsequent explanations. At least one of the explanations had to involve a comparison, for example it had the highest specific heat capacity. The heat capacity mark was the most frequent marking point awarded.

Gateway Science Report on the B622 /01 (B2, C2, P2)

General Comments

This question paper produced a good spread of marks. A small number of candidates scored exceptional marks and perhaps could have tackled the higher tier paper successfully. Conversely, a number of candidates seemed poorly prepared and scored very low marks. This was particularly evident in Section B, with the questions concerning colloids and alloys highlighting gaps in knowledge and understanding.

A significant number of candidates missed out answers, rather than having a guess. This did not seem to be due to lack of time but perhaps was more of an indication of a lack of exam practice. Although not specifically tested, the quality of spelling seemed particularly poor.

Comments on Individual Questions

Section A

- Q 1)
- (a) Most candidates scored one mark (for water). Only a minority scored both marks, food being the most popular wrong choice.
 - (b) Most candidates answered correctly.
 - (c) Few candidates scored all three marks, many omitting chlorophyll. Glucose and oxygen were the most popular wrong answers.

Q2)

- (a) Almost all candidates answered correctly, although some candidates ignored the key and tried to name the animals.
- (b) A surprising number of wrong answers were seen, perhaps as many as half.

Q 3)

- (a) Most candidates gave the correct year.
- (b) A number of candidates simply quoted the lowest figure rather than stating the year. Those that were right with the year tended also to score the explanation mark, though some did not express themselves concisely or clearly and did not gain credit.

Q 4)

Many candidates scored well, though there was good differentiation with a number of lower marks and vague remarks, such as “soft feet”. As might be expected, many wrote about water in the humps, but a small number gave higher level answers about fat being converted to water.

Q 5)

- (a) Again this provided a good differentiator with a number of correct answers. A number of the candidates however thought that the tiger was a herbivore, despite the name or the clue in the stem.
- (b) Only about half of the answers were correct. Foxes were though by many to be rare, perhaps they think this is why there is a ban on hunting. A surprising number said wood pigeons and some surprisingly thought rats were endangered.
 - (i) Mostly correct, though spellings were inventive.
 - (ii) Mostly correct, though spellings were inventive.
 - (iii) Some good answers – mainly to do with less/ban on hunting. There were many vague answers about breeding in captivity which were just creditworthy, though answers referring only to captivity/zoos did not gain credit.

Section B

Q 6)

- (a) Almost all correct.
- (b) A significant number stated “the magnesium had dissolved”, which was not credited. Many candidates referred to running out of gas or energy.
- (c) Most candidates scored 1 for the initial gradient. Few scored two as they showed the production of too much gas. A good differentiator.

- (d) Mostly correct, though there was a significant number of wrong answers, with some extraordinary reactants.

Q 7)

- (a) Mostly correct.
- (b) Any answer with “colour” was accepted as the candidate had shown they knew what pigment means.
- (c) Vague answers about “colour” were not accepted – why do we want things to be coloured? – and this only repeated the previous mark. More detail about protection or “making things look nice” were credited. The best answers referred to anti-rust or protection.
- (d) Very few candidates scored any marks here. The nature of colloids was not understood.

Q 8)

- (a) An amazing number failed to complete the equation at all. Again some miraculous products were made. A few candidates tried to write symbol equations.
 - (i) Few candidates scored marks.
- (b) Dust was the most popular answer, with noise a close second. Some vague remarks were made about damaging the environment and these were not credited.
- (c) Most candidates disappointingly got this wrong with 2, 5 or 6 being popular answers.

Q 9)

- (a) Despite being given a list of alternatives, a surprising number of candidates could not identify brass as the alloy.
- (b) Fairly basic answers were accepted such as “joining metals/wires”, but a significant number said things like “making car bodies/cans” clearly confusing soldering with welding.
- (c) Very few candidates could name the metals.
- (d) Many candidates repeated information from the question such as “they’re both metals”. The most common right answer referred to rusting. The majority of candidates at least did try to give one similar property and one different. Many gave uses, often repeating the information in the question.

Section C

Q 10)

- (a)
 - (i) Mostly correct.
 - (ii) Mostly incorrect with oil being a rather common error.
- (b) Pleasingly, many correct answers were seen, with or without working. Many scored 1 for working, but had the incorrect number of zeros in their answer. A number of candidates divided 20000/60.

Q 11)

- (a) There were some idiosyncratic spellings of alpha, but most were correct phonetically.
- (b) There were many vague comments about illness, but the most popular answer
 - (i) was causing cancer.
 - (ii) Most marks were scored for “gloves” or some reference to protective clothing, but many answers referred generally to goggles and did not score. There were a number of creditworthy answers referring to storage or keeping the class at a distance.

Q 12)

- (a) Many candidates gained credit with the most popular answer referring to
 - (i) reduction in/no pollution. A number did not gain credit by saying that electricity is free.
 - (ii) Credit was awarded mainly for reference to (no electricity) if dull/dark or only works in the light, but a number of candidates also made good comments about low efficiency.
- (b) A good differentiator as poor candidates did not even draw a circuit, but may have gained a mark for the proximity of magnet and coil. Other candidates drew circuits, but included the magnet in the wiring. A few candidates scored 3 for circuits with magnets moving near the coil. Any movement of the magnet near the coil scored, even if it was rotating along the axis of the magnet inside the coil.

Q 13)

- (a) Few candidates seemed to have any idea of theories about how the moon formed after a collision with the Earth. There were many answers about the big bang or dust coming together.
- (b) There were many comments about TV, radio, looking at space, photographing the Earth or mobile phones, and all received credit.

Q 14)

- (a) A disappointing number of wrong answers – between Earth and Mars being the most common.

- (b) "Comets colliding" the most popular and wrong answer.
- (c) Most answers referred correctly to holes and dents in the Earth. Dust was also popular. There were a number of vague answers about the Earth shaking or earthquakes.

Gateway Science Report on the B622 /02 (B2, C2, P2)

General Comments

The paper was sat by about 300 candidates. This was the first opportunity that Centres had to enter for this paper. The vast majority of candidates completed the paper and there was no evidence of lack of time. The mean mark for the paper was 34.3 out of 60. Analysis of questions shows that those addressing new material e.g. Paints and Pigments were less well answered. Some candidates appeared to be less well prepared in terms of their examination technique than for previous specifications, perhaps due to lack of time. To gain a grade C on this component, 25 marks were required and 39 for a grade A. There were few candidates gaining very low marks suggesting that Centres' entry policies were good.

Comments on Individual Questions

Section A

Q 1)

- (a) Part (a) was well answered by most candidates with a number gaining all three marks. The most common correct answers were 'large size feet to stop the camel sinking in the sand' and 'fat in the hump so that they can go for a long time without feeding'. A common misconception was that water was stored in the hump.
- (b) Part (b) was answered only by the best candidates. The idea of reduced water loss was not well understood. A minority of candidates gained a mark for reference to the spines used for protection.

Q2)

- (a) In part (a)(i) the vast majority of candidates correctly identified mammals. In part (ii) the most common correct answers were 'have fur' or 'give birth to live young'. A few candidates suggested 'suckle their young' and failed to score.
- (b) Few candidates understood what is meant by the term 'species'. Marks were awarded for reference to reproduction (1) to produce fertile offspring (1). Most candidates referred to similar characteristics which was insufficient to score.

Q 3)

- (a) Part (a) was well answered by the majority of candidates. Most candidates referred to the tigers being hunted and loss of habitat.

- (b) Part (b) was also well answered often by using a reverse argument to those put forward in part (a). Captive breeding was a common correct answer.

Q 4)

- (a) This question was well answered overall. Caddis fly larva or dragonfly nymph were correctly identified by all but the weakest candidates in part (a).
- (b) In part (b) weaker candidates confused highest biodiversity with highest total number of animals and incorrectly wrote stream C although usually gained the second mark for 'polluted water'.
- (c) Part (c) was again well answered with most candidates identifying stream A and providing a correct explanation.

Q 5)

- (a) Better candidates gained the mark in part (a). Weaker candidates either wrote word equations or failed to balance the equation correctly.
- (b) Part (b) discriminated well for upper ability candidates. A significant number of candidates recognised that carbon dioxide was present for photosynthesis. Fewer candidates made the link to the oxygen made being used in respiration.

Section B

Q 6)

- (a) Most candidates could correctly interpret the graph in part (a).
- (b) In part (b) most candidates drew a graph with a steeper initial gradient and gained the first mark. Weaker candidates levelled the graph off above 25 cm³ and lost the second mark.
- (c) In part (c) both marks were gained only by the best candidates. Few candidates referred to 'more crowded particles' although a greater proportion of candidates mentioned 'more frequent collisions' for the second mark. 'More collisions' could score one mark if there was no other creditworthy response. Significant numbers of candidates stated that the particles move faster at higher concentrations – a clear confusion with the effect of temperature on reaction rate.

Q 7) The subject matter of this question is new to GCSE and the question was generally poorly answered.

- (a) Higher ability candidates scored well on parts (a) and (b), correctly identifying
- (b) 'water' in part (a) and 'water or solvent evaporates' in part (b). 'White spirit' was a common incorrect answer in (a) and in (b) weaker answers referred to the paints 'drying up'. A number of candidates stated that the paint reacted with the air and failed to score.
- (c) Colloids were not well understood in part (c) even by better candidates. In part (i) the mark scheme required a reference to solid particles dispersed but not dissolved in a liquid. A reference to small particles was required in part (ii).

Q 8)

- (a) Part (a) was very poorly answered even by better candidates. Thermal decomposition was a very rare answer in part (i) and very few candidates could write the symbol equation in part (ii).
- (b) Part (b) was a good discriminator. Better candidates correctly described marble as a metamorphic rock and limestone as a sedimentary rock. Some candidates thought that marble was an igneous rock. Correct descriptions of rock types e.g. 'the particles in marble are closer together due to the high pressure and temperature' scored.

Q 9)

- (a) The constituents of solder were only correctly stated by a minority of candidates in part (a). Iron and aluminium were frequent incorrect answers.
- (b) Most candidates noted that the car would have a longer lifetime in part (b).
- (c) The majority of candidates recognised that aluminium has a lower density than iron and that cars made from aluminium would have better fuel economy in part (c).

Section C

Q 10)

- (a) Part (a) was well answered with most candidates scoring 3 or 4 marks.
- (b) Most candidates correctly carried out the calculation in part (b) achieving an answer of 1 200 000 watts. It was pleasing to see that the majority of candidates showed their working.
- (c) Part (c) was correctly answered only by the best candidates. Weaker candidates thought that at high voltages the current was faster. Marks were awarded for noting that at high voltages the current is reduced, therefore the temperature is reduced and less energy is wasted.

Q 11)

- (a) Most candidates scored one or both marks in part (a). In part (i) the most common answers were that the process was renewable or that little or no pollution was produced. By far the most common answer in part (ii) was that the cells would not work at night.
- (b) Part (b) proved more demanding and again was only correctly answered by better candidates. The mark scheme required a recognition that the photocell absorbs energy, and that this knocks electrons loose from the silicon atoms so giving rise to an electric current. Weaker answers frequently talked about atoms moving.

Q 12) This question was well answered and most candidates scored one or both marks. In part (b) 'comets colliding' was a common incorrect answer.

Q 13)

- (a) Part (a) was well answered with many candidates scoring for rocks, living things, cosmic rays and the nuclear industry. Vaguer answers such as 'food' or 'power stations' were not credited.
- (b) Part (b) was usually well answered. Where marks were lost, it was usually due to quoting materials other than aluminium and lead or for quoting them the wrong way round.
- (c) Ionisation was only well understood by the best candidates in part (c). The mark scheme required a reference to electrons for the first mark and their removal for the second mark.

**General Certificate of Secondary Education
Gateway Science(Specification Code J640)
January 2007 Assessment Series**

Unit Threshold Marks

Unit		Maximum Mark	a*	a	b	c	d	e	f	g	u
B621/01	Raw	60				39	32	25	19	13	0
	UMS	69				60	50	40	30	20	0
B621/02	Raw	60	49	40	31	23	16	12			0
	UMS	100	90	80	70	60	50	40			0
B622/01	Raw	60				36	30	24	18	12	0
	UMS	69				60	50	40	30	20	0
B622/02	Raw	60	46	39	32	25	17	13			0
	UMS	100	90	80	70	60	50	40			0

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

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