

# **Additional Science B J641**

**Gateway Science Suite**

General Certificate of Secondary Education

## **Reports on the Units**

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**January 2010**

**J641/MS/R/10J**

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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 specification 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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## **B623/01      Foundation Tier**

### **General Comments**

The paper gave a full range of marks from 0 to 58. Centres should be congratulated on entering pupils for the correct tier with less than 100 candidates scoring over 50 out of an entry of almost 18000.

The mean mark was 32.6 with a standard deviation of 8.5 which was very similar to last January's paper.

It was nice to see candidates attempting most of the questions on the paper and leaving very few blank spaces. There was no evidence that candidates were short of time or finished early.

### **Comments on Individual Questions**

#### **Question 1**

Even though part (a) was low demand few candidates were able to give the correct name for X which was vacuole. Of those who correctly answered vacuole, few spelled it correctly. Examiners were lenient and credited the answer if it could be recognised as the correct word. In part (ii) about 10% gave the correct answer of support with many giving the incorrect answer 'control of the cell'.

Part (b), the majority correctly stated DNA. In (c) about half the candidates correctly gave the answer 'cell differentiation' and most candidates knew that shoots grow upwards because they grow towards light.

#### **Question 2**

In part (a) most candidates scored at least 1 mark. The most common mistakes were to choose body instead of lungs for the first answer and veins instead of arteries for the second. Surprisingly, only half the candidates managed to score in part (b). Some of the answers which the examiners accepted were the idea of mechanical failure, the batteries running out and problems of rejection.

Few candidates were able to give the correct answer 'genetic engineering' to part (c).

#### **Question 3**

In part (a) (i) about half of the candidates were able to give the correct answer of 20minutes. The majority of incorrect answers were from candidates who misread the question and gave the answer 10. In (ii) the majority of candidates correctly gave the value 7. Candidates often scored 1 in part (b) for a turning point between 35 and 45 but often inverted the graph. The acrosome proved difficult for the majority of pupils. Examiners were strict on the use of "cell wall", which only applies to plants, and always marked the section wrong if this term was used.

#### Question 4

This question was the hardest on the paper. Candidates wrote a lot but often failed to answer the question. Examiners were looking for the idea that

- The old potato has food reserves
- New shoots and roots grow
- Form eyes
- Leaves develop
- Involves cell division

In part (b) approximately 25% of candidates gave the correct answer of asexual. Part (c) gave an even spread of answers with approximately one third giving the correct answer (number 4 in the list). In (d) only a quarter of candidates gave a correct answer which could have been any from: conserve water, keep the plant warm, protect from pests and allow light into the plant.

#### Section B

#### Question 5

This question was about the Group 1 elements.

The majority of candidates was able to name another group 1 element for part (a) but did not know the name of this group of elements, with about 20% giving the correct answer to part (b) and 25% giving no response to this question. In part (c) candidates should have noted that it was a two mark question and as such two marking points are needed for full marks. These points were 'reacted with water' and 'reacted with oxygen'. In many cases only one of the points was given. The word equation in part (d) proved difficult for the majority of candidates, with few being able to give both products of the reaction.

#### Question 6

This question was answered well by most candidates. In parts (a) and (b) few candidates identified the metals incorrectly. Most candidates were able in part (c) to explain why copper and silver are not used for pylon wires. There were a significant number of candidates who only gave one answer even though it was a two mark question.

Part (d) caused problems for foundation candidates. Several did not understand the word property and gave the names of other metals as the answer. The question asked for a property of metals, many gave answers such as strength (0 marks) which when applied to metals should have been strong (1 mark).

#### Question 7

The question on the periodic table was answered well by the majority of candidates. However, a significant number of candidates failed to read the instructions and chose answers from the periodic table which were not in the grid provided at the start of the question.

In part (a) the majority of candidate were able to pick the correct element from those in the table, the worst answered part was (iv): the atom with 8 electrons in its outer shell. Part (b) was again answered well with few candidates mixing up groups and periods.

### **Question 8**

About half the candidates correctly answered all the parts of this question. In part (b) the most common wrong answer was positive, suggesting that candidates had failed to read the question and incorrectly thought the question was continuing from (a) about the centre of the atom. In part (c) examiners allowed “the number of electrons in the atom” as a correct answer but not “the number of electrons in the outer shell”.

## **Section C**

### **Question 9**

In part (a) both (i) and (ii) were answered well with the majority of candidates giving two correct answers. The main incorrect answer to part (i) was D, a horizontal straight line. In part (b) the expected answer for this low demand question was distance but, surprisingly, a large variety of answers were given. Examiners accepted any answer that meant distance for example “how far ...” but did not accept the unit, metres.

### **Question 10**

This question did not discriminate well. The majority of candidates gave the correct answer to all three parts. Several candidates gave “goes slower” in answer to (c), which, whilst not the best way of expressing a change in acceleration, was accepted as meaning reduced.

### **Question 11**

This question asked the traditional thinking-braking question in a slightly different way. The question was at standard demand and discriminated well. Approximately half the candidates answered (b) correctly but only a quarter of the candidates were able to answer (a) correctly. The most common mistake in (a) was to state that higher speed left the thinking distance unchanged.

### **Question 12**

This question proved straightforward for all candidates. The majority were able to identify a simple pattern in part (a) and take an accurate reading from the graph for part (b). Part (c) proved more challenging. There were poor attempts at extending the graph, examiners were however told to ignore this and take the reading from the candidate’s line, however inaccurate. Several candidates did not extend the graph; they were only credited if they gave the correct answer in the range 60 – 70.

### **Question 13**

This question was an attempt to examine work and power at low demand and this worked well. The two statements from the specification are: Recognise that when work is done it depends on the size of the force and the distance moved and Describe power as a measurement of how quickly work is being done. Many candidates tried to apply mathematical expressions to this question but this was too high a demand. In order to credit this at low demand examiners looked for the “idea of loaded most bricks” in part (a) and “idea of took least time” in part (b). They ignored any other statements in the answer.

**Question 14**

In part (a) examiners looked for petrol or diesel; oil was not accepted . Surprisingly candidates found (b) difficult. Examiners looked for the idea that it needed charging and that the energy was stored in a battery. Answers such as “needs plugging into the mains” or “uses solar cells” were perfectly acceptable for collecting the energy.

**Question 15**

Part (a) most candidates were able to name another energy-absorbing safety feature. Part (b) proved difficult with few candidates giving the correct answer: heat. In part (c). examiners accepted a wide variety of answers as long as they related to safety, for example easier/quicker to open, just have to press a button and can continue to concentrate on driving rather than wind a window down. In part (d) the majority of candidates realised that seat belts become damaged after an accident.

## **B623/02 Higher Tier**

### **General Comments**

The paper produced the full range of marks and the mean mark was 33.5. The paper gave candidates the opportunity to show what they know, understand and can do. There was real stretch and challenge at grades A and A\*. Assistant examiners and team leaders felt that the paper was set at an appropriate level of difficulty. Most candidates could access the paper and very few questions were omitted. There was no evidence of lack of time. A small number of candidates would have been better served by entry to the foundation tier.

The paper differentiated well. 23 marks were required for grade C, 40 for grade A and 48 for A\*. Candidates performed better on the physics and chemistry sections of the paper and less well on the biology.

### **Comments on Individual Questions**

#### **Section A**

##### **Question 1**

- 1(a) The vast majority of candidates scored both marks for backflow and arteries. Blockage and veins were the most common incorrect answers.
- 1(b) This question was not as well answered as might have been expected, given that it targeted standard demand. Vague answers in terms of 'it might stop working' were common, although better candidates were aware of the idea of rejection or that the mechanical heart would not last forever.
- 1(c) Restriction of blood flow in arteries was well understood, although some candidates failed to score as they referred to restriction of blood flow in veins.

##### **Question 2**

- 2(a) Most candidates correctly identified the optimum pH as 7 in part (i). Only the most able candidates scored 2 marks in part (ii). The mark for enzymes reacting fastest at pH 7 was most frequently awarded. Knowledge of enzyme denaturing and the lock and key mechanism was patchy. A few candidates talked about temperature rather than pH and failed to score.
- 2(b) Most candidates correctly sketched the U-shaped pattern with a trough between 35 and 45°C for 2 marks. Weaker candidates, who drew the graph the wrong way up, still scored 1 mark for a peak between 35 and 45°C.
- 2(c) The job of the enzymes in the acrosome was generally well understood. Despite similar questions being set on previous examination papers, a small number of candidates still stated that the acrosome digests the egg cell wall, thereby failing to score. A significant minority of candidates thought that the acrosome's role is to find the egg.



### **Question 3**

- 3(a) Cloning was not well understood. The idea of reduced variation as a disadvantage of cloning was better known than the advantage of producing a genetically identical plant. Many candidates referred to the potato plants having the 'desired characteristics' and failed to score. A common correct disadvantage was that if one cloned plant became diseased then the others were at risk.
- 3(b) Tissue culture was not well understood and answers frequently referred to genetic engineering or taking cuttings and therefore scored no marks.
- 3(c) Most candidates knew that selective breeding reduces variation but does not increase the rate of mutation.

### **Question 4**

- 4(a) Diffusion was only known by approximately half of candidates. Photosynthesis, respiration and oxidation were common errors.
- 4(b) Many candidates scored 1 mark for the idea of the spongy layer having holes / gaps or a large surface area. The most common incorrect answer was "the spongy layer is thin".
- 4(c) The idea that plant cells retain the ability to differentiate, but animal cells lose this ability, was only known by about a fifth of candidates. Incorrect answers often compared cell division by mitosis and meiosis or referred to the structure of plant and animal cells.
- 4(d) In part (i) many candidates knew that auxin is made in the tip of the plant stem, although a significant proportion of candidates did not score the mark as they also referred to the roots in their answer. Phototropism was well known in part (ii) although geotropism and photosynthesis were common misconceptions.

## **Section B**

### **Question 5**

- 5(a) The number of candidates who scored both marks for identifying sodium hydroxide and hydrogen was disappointing. Sodium oxide was a common error as was carbon dioxide for the name of the gas.
- 5(b) Most candidates knew that Group 1 elements have 1 electron in their outer shell.
- 5(c) Oxidation as loss of electrons was not well known. A large proportion of candidates incorrectly identified the type of reaction (reduction and electrolysis being the most frequent errors) but scored a mark for explaining that electrons had been lost in the equation.

### Question 6

- 6(a) This question was very well answered with candidates correctly using the data given to explain that silver and copper are too expensive and their density is too high to be used to make pylon wires.
- 6(b) Again, very well answered. Most candidates suggested using iron because it has a high density and is cheap.
- 6(c) Only the best candidates were able to correctly explain how metals conduct electricity in terms of the movement of delocalised electrons. A wide variety of misconceptions existed such as movement of atoms / ions or the electric current finding its way between the gaps in the atoms.

### Question 7

Ar, Br and Cu were well known in parts (a), (b) and (c). However most candidates failed to include the first short period when counting to Period 5 and therefore incorrectly gave Ba as the answer to part (d).

### Question 8

- 8(a) Most candidates knew that the atomic number is the number of protons or the number of electrons in an atom. A significant minority of candidates wrote 'the number of protons and electrons' and failed to score. It is probable that some correctly understood atomic number but failed to score due to inaccurate use of language.
- 8(b) About a quarter of candidates scored both marks for the ionic bonding in sodium oxide. Candidates who drew correct structures often gave incorrect charges e.g.  $O^-$  or  $Na^{2+}$ . Marks were often lost by candidates drawing the electrons lost by the sodium atoms on both the sodium and oxygen atoms. Many candidates drew the sodium and oxygen atoms sharing electrons and failed to score.
- 8(c) The majority of candidates correctly indicated that a Chlorine-37 atom contains 20 neutrons and has an electronic structure of 2.8.7. Misconceptions were usually 37 neutrons or an electronic structure of 2.8.8.8.8.3, obtained by using the mass number instead of the atomic number (even though the number of electrons was given in the table)

## Section C

### Question 9

- 9(a) C in part (i) and D in part (ii) were usually correct. Part (ii) scored more highly than part (i).
- 9(b) This question was also well answered. In (i) the most common misconception was that higher speed does not change thinking distance. Part (ii) was usually correct.

### Question 10

The best candidates correctly calculated the acceleration of the car as  $2 \text{ m/s}^2$  and scored 3 marks. Many scored 2 marks for 2.6, 2.63 or 2.625, having failed to subtract 1000 from 4200. A common incorrect answer given by weaker candidates was 4.2, gained by dividing 4200 by 1000.

### Question 11

- 11(a) Virtually all candidates correctly identified that the larger the engine size the greater the carbon dioxide emissions (or vice versa).
- 11(b) In part (i), most candidates correctly reached the answer of 190. Similarly  $65 \pm 5$  was usually reached in (ii) although a small number of candidates incorrectly read the question and gave the carbon dioxide emissions from a  $6000 \text{ cm}^3$  engine. Where answers lay outside the  $65 \pm 5$  range, examiners checked the reading on the graph and awarded the mark if the reading was correct for a sensible extrapolation.

### Question 12

- 12(a) In part (i) most candidates knew that the twig increases in speed because gravity or weight is greater than drag. There were however frequent explanations in terms of kinetic and gravitational potential energy, which failed to score. Most candidates understood the idea of balanced forces in part (ii).
- 12(b) Most candidates correctly calculated 5N. Amongst the minority of candidates who failed to score in this question, 2.5N was the most popular answer.

### Question 13

- 13(a) About 90% of candidates appreciated that Helen's car had the best fuel consumption because it travelled the greatest distance on the given volume of fuel.
- 13(b) As the explanation was not required most candidates scored this mark. The most common reason for failing to score was giving vague answers, eg speed or mass, which did not refer to an increase in the factor stated.
- 13(c) In part (i), 'her force', 'her face', 'her body' or 'the impact' were the most common answers that failed to score. (Kinetic) energy was required. References to other forms of energy did not score. The most able candidates scored 2 marks in part (ii) for correctly stating that the stopping distance increased and the acceleration decreased. Occasionally 3 marks were awarded for candidates who also mentioned  $F=ma$ , but very few candidates wrote about the stopping distance increasing. Weaker candidates wrote about what happens to the car in a crash and failed to score.
- 13(d) A good end to the paper, with most candidates suggesting that 'you only have to press a button' so the driver is less distracted. There were, however, some strange misconceptions about electric windows being stronger and therefore less likely to break in a crash.

## **B624/01      Foundation Tier**

### **General Comments**

The examination was accessible overall with fewer blank spaces than seen on papers in previous years. There was a significant increase in the entry for this January paper compared to previous years. Few candidates scored less than 20 marks suggesting a small but significant improvement in the performance of the candidates for this paper.

The paper differentiated well and performance across the three strands of the paper appeared to be fairly even.

A number of candidates repeated the stem of the question in the hope of gaining credit. In Q9(a) an equation was given for the Haber process. Candidates were asked to write down the formula of one reactant. A number of candidates of all abilities repeated the equation in the hope of a mark.

Many candidates failed to realize that the addition of a resistor to a circuit reduces the current in the circuit. Centres need to be aware that many candidates think organic farming is so labour intensive that tractors are not used and seeds are sowed by hand. Some candidates thought that intensive farming was always conducted under cover, in glass houses, and organic farming did not use fertilizers at all.

Few candidates had any idea at all about how a smoke detector works, a point revealed by Q14(b)(ii). Surprisingly, a number of candidates failed to match water softener with its function to soften water in Q 8. It was pleasing to see many candidates able to calculate relative formula masses, though percentage yield calculations are still a problem. As many papers contain a two mark question on percentage yield, candidates who can remember the formula and are equipped mathematically to do the calculation are at an advantage.

### **Comments on Individual Questions**

#### **Section A Biology**

1 (a)(i) (ii) Both questions well answered with few candidates unable to score 2 marks.

1 (b) A well answered question with oxygen and glucose being the most common correct answers. Incorrect responses included carbon dioxide and chlorophyll.

1 (c) A very well answered question.

2 (a) All candidates identified the piece of fruit as able to decay fastest.

2 (b) A number of candidates scored 2 of the marks. Candidates were reluctant to use the word temperature as a factor that affects how quickly bread goes mouldy. A number of candidates thought that keeping the bread in a bin would stop it going mouldy.

3 (a) Many candidates did not interpret the question correctly. They wrote about the advantages and disadvantages of organic farming. Answers like, 'organic farming is healthier and intensive farming is more eco-friendly', were prevalent but scored no marks. Fewer chemicals used in organic farming would have scored 1 mark if no other answer had been given.

3 (b)(i) (ii) Both well answered.

## *Reports on the Units taken in January 2010*

3 (c) A common answer for a disadvantage of organic farming was 'it takes longer to grow'. This response was ignored. Expected answers included lower yield and more likely to have crops eaten by pests.

4 (a) About a third of the candidates gave the correct answer: photosynthesis. Other candidates guessed and a variety of responses were offered.

4 (b) (i) A difficult calculation which was answered correctly by about a third of the candidates. Very few candidates showed any correct working so marks were either 2 or 0.

4 (b) (ii) (iii) These questions were found to be extremely difficult. In part (ii) candidates gave 'no energy left' as an incorrect response. Part (iii) was found to be one of the most difficult questions on the paper with many candidates indicating that 'there is more energy in the grass' as an incomplete response.

4 (c) Very well answered.

### **Section B Chemistry**

5 (a) This was considered to be an easy question but numerous candidates were unable to identify 'apparatus A' as a measuring cylinder. Measuring tube was one of the most common answers.

5 (b) Water was a common answer for 1 mark, but half of the candidates did score 2 marks for salt + water.

5 (c) This question, which asked for the pH of potassium hydroxide solution, was not as well answered as 5 (d) which asked for the pH of nitric acid.

5 (e) A number of candidates correctly named potassium nitrate as the fertilizer.

5 (f) A well answered question with many candidates able to name phosphorus as the third essential element.

6 (a) and (b) were calculations. The answers were better than in previous years. Q (b) was correctly answered by about 75% of candidates.

6 (c) A percentage yield calculation answered by about half of the candidates.

7 (a) and 7 (b) Many candidates gave the correct answers, continuous and batch, as the names for the respective processes.

7 (c) Many candidates were able to score 2 marks for writing about the costs of making medicines.

8 A well answered question for 3 marks. Perhaps more candidates should have scored 3 marks. A match between detergent and cleans dishes and between water softener and softens water seem obvious. It is possible that the word active in front of detergent put some candidates off.

9 (a) Over half of the candidates were able to recognise the reactant in the equation.

9 (b) Few candidates were able to get this question right. The candidates who did not understand the meaning of the word 'condition' gave answers like 'ammonia'. Other candidates were not specific in their answers and wrote pressure, not high pressure, or high temperature, not 450°C.

**Section C Physics**

10 (a) All candidates were able to identify the gap in the circuit.

10 (b) (i) The correct answer was it decreases, but a number of candidates said it increases. Other candidates wrote about the current travelling more slowly.

10 (b) (ii) Over half the candidates correctly indicated that the brightness of the bulb increased.

11 (a) (i) Many correctly identified the centre of compression as A.

11 (a) (ii) This question was less successfully answered than 11(a)(i).

11 (b) Very few candidates were able to give another example of a longitudinal wave. Radio waves was a common incorrect response.

12 (a) Well answered.

12 (b) Not as well answered as expected. A common response was “their opposite”; the word charge was not used.

12 (c) Few candidates could give two examples of the use of electrostatics. Use in defibrillators was the most common correct response.

13 (a) A well answered question, most candidates got at least 1 mark for realising that the nucleus is unstable.

13 (b) (i) Only good C grade candidates correctly drew the graph. Most candidates drew the graph with a positive gradient.

13 (b)(ii) The mark scheme allowed “electrons per second” which enabled some candidates to score 1 mark. The next most common correct answer was “waves per second”. Most candidates showed little understanding despite using accurate terminology such as hertz and vibrations.

14 (a) Most candidates gave alpha and beta, the correct answers.

14(b) (i) Over half the candidates managed to get this question right.

14 (b) (iii) Candidates found this the most difficult question on the paper with most scoring 0. The most able candidates managed to score a mark for appreciating that the smoke in some way blocks the radiation.

## **B624/02 Higher Tier**

### **General Comments**

Candidates generally performed well on this paper. Very few questions were not attempted and a number of candidates showed a good breadth of knowledge.

Areas of the specification that were clearly understood included;

- Food chains and energy transfer.
- Chemical calculations.
- Static electricity.

Areas of the specification that were clearly not understood included;

- The absorption of minerals by active transport.
- Transpiration and plasmolysis.
- Ionisation and smoke alarms.
- Radioactive decay.

### **Comments on Individual Questions**

#### **Question No. 1**

(a) The majority of candidates knew that the process was photosynthesis. The errors included a misunderstanding of the term process which resulted in answers such as light.

(b) Most candidates successfully calculated the percentage transfer of energy. Those candidates that got it wrong usually gave 25%. In part (ii) the majority were able to identify a correct reason such as heat or movement. However in part (iii) few understood that the mice were unable to digest parts of the plant such as the cellulose cell wall. Many believed it was to do with the fact that the mouse could not eat the entire field of grass but the hawks would eat the whole mouse.

(c) The majority of the candidates understood that there would be more mice to eat the grass.

#### **Question No. 2**

(a) Candidates often lost this mark due to vague comments such as 'gas can move easier'. Candidates should be encouraged to use terms such as gas exchange or diffusion.

(b) Most candidates correctly identified the palisade layer in part (i) and magnesium in part (ii). Very few candidates knew that minerals were absorbed by active transport, however. Osmosis proved to be a very common error.

#### **Question No. 3**

Candidates were generally successful in all parts of question three. However in part (d) some candidates lost the mark by putting answers such as pollution or breathed out by humans.

#### Question No. 4

(a) Most candidates gained a mark in part (a). However candidates should be encouraged to use the term transpiration instead of evaporation or diffusion. Osmosis was often seen as an incorrect answer.

(b) This question was only answered successfully by the more able candidates. Many candidates neglected to make comparisons and stated water loss was due to evaporation but not **more** evaporation. More light led to confusion with photosynthesis. Again candidates often misused the term osmosis.

(c) Many candidates were able to draw a plasmolysed cell but very few correctly labelled their diagram to gain the marks.

#### Question No. 5

Parts (a) and (b) were well answered by most candidates.

Part (c)(i) tended to be answered correctly, however some candidates put ammonium for the alkali instead of ammonia or ammonium hydroxide. In part (ii) the question was often misunderstood. Many candidates did not describe the method Jo should use: add an indicator and then add alkali to acid until colour changes. Instead they described neutralisation i.e. an acid reacts with an alkali to make a neutral solution. Incorrect answers to part (iii) included filtration or lets it fizz.

(d) This question tended to be answered correctly only by the more able candidates.

#### Question No. 6

(a) The majority of candidates were able to calculate the correct percentage.

(b) Most candidates were able to complete the calculations. However a number of candidates neglected to divide by ten and gave an answer of 88 for the first part.

#### Question No. 7

Most candidates gained at least one mark for this question, mainly for the idea of expensive raw material or lots of testing. When candidates mentioned labour costs many did not stress the idea of the process being labour intensive but simply said you needed to pay people to test the medicines.

#### Question No. 8

(a) Although most candidates answered part (i) correctly some candidates gave 'high temperature' as an answer without specifying the correct temperature needed. The majority of candidates knew the role of the catalysts.

(b) Candidates still find this type of question difficult with only the more able scoring well. Many candidates tried to give the relative formula mass.



**Question No. 9**

- (a) Most candidates knew beta and gamma were the other types of radiation.
- (b) Very few candidates understood how the smoke alarm worked. Many thought the smoke caused the ionisation or that the smoke completed the electrical circuit. There were, however, a few excellent answers that showed a very clear understanding of the process.

**Question No. 10**

- (a) More candidates gained one mark than two for this question. Most knew the atom was unstable but thought alpha particles were the same as helium atoms.
- (b) Very few candidates correctly identified lead as the correct answer. Many answered astatine or bismuth. Only a minority were able to correctly answer part (ii). Some candidates had written the numbers so small that it became difficult to distinguish 5 from 3.

**Question No. 11**

- (a) Most candidates understood the idea of like charges repelling each other.
- (b) Candidates more often gave one correct answer rather than two. Errors included not giving a description, for example 'in tankers' instead of refuelling or cleaning tankers.
- (c) The majority of candidates were able to give a correct example, however they should be discouraged from giving the example stated in the question.

**Question No. 12**

- (a) The majority of candidates were able to identify the dog and horse.
- (b) Candidates lost marks for this question by giving vague answers. They should be encouraged to answer in terms of tissue damage and not just 'it is harmful'. Also 'it is a clearer picture' needs to be extended to say 'because it also shows soft tissue not just bone'.

**Question No. 13**

- (a) Candidates tended to describe how the fuse works without explaining why it gives protection. For example they said 'the fuse melts stopping the current'. They did not say that 'stopping the current prevented further damage to the lamp'.
- (b) Candidates either correctly gave the answer of 0.5amps or the incorrect answer of 2amps.

# Grade Thresholds

General Certificate of Secondary Education  
Additional Science B (Specification Code J641)  
January 2010 Examination Series

## Unit Threshold Marks

Unit		Maximum Mark	A*	A	B	C	D	E	F	G	U
<b>B623/01</b>	Raw	60	-	-	-	38	31	24	17	10	0
	UMS	69	-	-	-	60	50	40	30	20	0
<b>B623/02</b>	Raw	60	48	40	31	23	18	15	-	-	0
	UMS	100	90	80	70	60	50	45	-	-	0
<b>B624/01</b>	Raw	60	-	-	-	36	28	21	14	7	0
	UMS	69	-	-	-	60	50	40	30	20	0
<b>B642/02</b>	Raw	60	48	39	29	20	14	11	-	-	0
	UMS	100	90	80	70	60	50	45	-	-	0

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