



GCSE

Additional Science A

General Certificate of Secondary Education

Unit A215/01: Unit 1 – Modules B4, C4, P4

Mark Scheme for June 2011

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by Examiners. It does not indicate the details of the discussions which took place at an Examiners' meeting before marking commenced.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

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Annotations

Used in the detailed Mark Scheme:

| Annotation | Meaning |
|---------------------|---|
| / | alternative and acceptable answers for the same marking point |
| (1) | separates marking points |
| not/reject | answers which are not worthy of credit |
| ignore | statements which are irrelevant - applies to neutral answers |
| allow/accept | answers that can be accepted |
| (words) | words which are not essential to gain credit |
| <u>words</u> | underlined words must be present in answer to score a mark |
| ecf | error carried forward |
| AW/owt/e | credit alternative wording / or words to that effect |
| ORA | or reverse argument |

Available in scoris to annotate scripts:

| | |
|--|---|
| | indicate uncertainty or ambiguity |
| | benefit of doubt |
| | Contradiction |
| | incorrect response |
| | error carried forward |
| | draw attention to particular part of candidate's response |
| | draw attention to particular part of candidate's response |
| | draw attention to particular part of candidate's response |
| | no benefit of doubt |

| | |
|--|---|
| | Reject |
| | correct response |
| | draw attention to particular part of candidate's response |
| | information omitted |

Subject-specific Marking Instructions

- Accept any clear, unambiguous response (including mis-spellings of scientific terms if they are *phonetically* correct, but always check the guidance column for exclusions).
- If a candidate alters his/her response, examiners should accept the alteration.
- Crossed out answers should be considered only if no other response has been made. When marking crossed out responses, accept correct answers which are clear and unambiguous.

e.g. for a one-mark question where ticks in the third and fourth boxes are required for the mark:

| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| |
| |
| <input type="checkbox"/> |

*This would be worth
1 mark.*

| |
|--------------------------|
| <input type="checkbox"/> |
| <input type="checkbox"/> |
| |
| |
| <input type="checkbox"/> |

*This would be worth
0 marks.*

| |
|--------------------------|
| |
| |
| |
| |
| <input type="checkbox"/> |

*This would be worth
1 mark.*

d. The list principle:

If a list of responses greater than the number requested is given, work through the list from the beginning. Award one mark for each correct response, ignore any neutral response, and deduct one mark for any incorrect response, e.g. one which has an error of science. If the number of incorrect responses is equal to or greater than the number of correct responses, no marks are awarded. A neutral response is correct but irrelevant to the question.

e. Marking method for tick-box questions:

If there is a set of boxes, some of which should be ticked and others left empty, then judge the entire set of boxes.

If there is at least one tick, ignore crosses and other markings. If there are no ticks, accept clear, unambiguous indications, e.g. shading or crosses. Credit should be given according to the instructions given in the guidance column for the question. If more boxes are ticked than there are correct answers, then deduct one mark for each additional tick. Candidates cannot score less than zero marks.

e.g. if a question requires candidates to identify cities in England:

| | |
|-------------|--------------------------|
| Edinburgh | <input type="checkbox"/> |
| Manchester | <input type="checkbox"/> |
| Paris | <input type="checkbox"/> |
| Southampton | <input type="checkbox"/> |

the second and fourth boxes should have ticks (or other clear indication of choice) and the first and third should be blank (or have indication of choice crossed out).

| | | | | | | | | | | |
|---------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Edinburgh | | | ✓ | | | ✓ | ✓ | ✓ | ✓ | |
| Manchester | ✓ | ✗ | ✓ | ✓ | ✓ | | | | ✓ | |
| Paris | | | | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| Southampton | ✓ | ✗ | | ✓ | | ✓ | ✓ | | ✓ | |
| Score: | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | NR |

MARK SCHEME:

| Question | | Answer | Mark | Guidance |
|----------|----|--|------|--|
| 1 | a | the same as the energy that he loses <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> | 1 | |
| | b | higher than the temperature in his fingers <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) | 1 | |
| | c | brain (1) | 1 | |
| d | i | 34°C (1) | 1 | |
| | ii | maximum of two symptoms from: shivering ; confusion/ drowsiness ; slurred speech ; loss of coordination ; weak pulse ; slow or shallow breathing ; maximum of two treatments from: insulate/ give examples of insulation, e.g. wrap in a blanket /extra clothing/ sleeping bag ; sharing body heat / go somewhere warm ; handle gently (to keep blood flow in limbs low) ; warm gently (with warm towels) ; give warm drinks ; | 3 | credit two treatments and one symptom OR viceversa accept can't think can't pay attention / loss of judgment. accept body temperature drops below 35°C accept reverse argument e.g. do not give hot bath, use hot water to warm them up, rubbing skin to warm them up, give alcoholic drinks ignore loss of feeling in feet/ hands/ blue lips or fingers ignore vague "keep them warm" statements |
| | | Total | [7] | |

| Question | | Answer | Mark | Guidance |
|----------|---|--|------|--|
| 2 | a | breathing out <u>and</u> sweating (1) | 1 | both correct for 1 mark |
| | b | <p>chemical</p> <p>how much her kidneys reabsorb</p> <p>sugar</p> <p>water</p> <p>salt</p> <p>all of it</p> <p>as much as the body needs</p> | 2 | 3 correct = 2 marks 1 or 2 correct = 1 mark |
| | | Total | [3] | |

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Mark Scheme

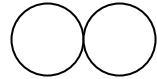
June 2011

| Question | | Answer | Mark | Guidance |
|----------|---|---|------|---|
| 3 | a | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> ... proteins that speed up chemical ... <input checked="" type="checkbox"/> (1) | 1 | |
| | b | B (1) | 1 | |
| | c | decrease denatured shape | 2 | 3 correct = 2 marks 2 correct = 1 mark 1 or 0 correct = 0 marks |
| | | Total | | [4] |

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| Question | | Answer | Mark | Guidance |
|----------|-----|---|------|--|
| 4 | a | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> iron chloride (1) | 1 | |
| | b | reactivity is different / less (1) Iodine is the cause of the difference (1) | 2 | linking less glow to less reaction = 1 mark explaining less reaction with property of iodine = 1 mark "iodine is less reactive" = 2 marks accept reverse argument about chlorine |
| | c i | any two from: sodium is [very] reactive ; reacts with air/ oxygen/ moisture/ Sodium does not react with the oil ; | 2 | reject dangerous (it is in stem) accept oil stops it <u>reacting</u> . ignore vague references to "keeping it safe", or "safer" |
| | ii | NaCl (1) | 1 | ignore any equation as long as the product is correct. reject if capitalisations are wrong. |
| | iii |  | 1 | |
| Total | | [7] | | |

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| Questions | | Answer | Mark | Guidance |
|-----------|---|---|------|---|
| 5 | a | <p style="text-align: center;">symbol</p> <p style="text-align: center;">electronic structure</p> | 2 | <p>3 lines correct = 2 marks</p> <p>2 or 1 lines correct = 1 mark</p> |

| Question | | Answer | Mark | Guidance |
|----------|---|---|------|--|
| 5 | b | <p>... the particles stay as ions.</p> <p><input type="checkbox"/></p> <p><input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> | 2 | |
| | | <p>... move randomly through the solution</p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input checked="" type="checkbox"/> (1)</p> | | |
| | c | circles all approximately the same size they should be grouped together positive circles may only touch negative, and vice versa | 1 | <p>There must be at least four circles; any extra circles must be correct</p> <p>credit any <u>correct</u> pattern of four circles, including chains</p> <p>ignore small gaps between circles</p> <p>accept variation in circle size so long as it doesn't look intentional</p> |
| Total | | [5] | | |

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| Question | Answer | Mark | Guidance |
|----------|---|--|----------|
| 6 | All the lines for sodium are present. ...sodium...one other element are present. | <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) | 2 |
| | Total | [2] | |

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| Question | | | Answer | Mark | Guidance |
|----------|---|----|---|------------|--|
| 7 | a | 1 | <div style="border: 1px solid black; padding: 2px; text-align: center;"> A C B </div> | 2 | Three correct answer for 2 marks One or two correct for 1 mark |
| | | ii | 5 N (1) | 1 | |
| | b | | speed decreases (1) because of friction with ground / air resistance / counterforce from grass (owtte) (1) | 2 | interpreting graph for 1 mark explaining change of speed for 1 mark reject "speed increases first and then decreases" |
| | | | Total | [5] | |

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| Question | | Answer | Mark | Guidance |
|----------|---|-----------------------|------------|------------------------------|
| 8 | a | 70×5 (1) | 1 | |
| | b | 200 (1) | 1 | Ignore any extra units added |
| | c | B (1) | 1 | |
| | d | force (1) work (1) | 2 | |
| | | Total | [5] | |

| | | | | |
|---|---|---|------------|---|
| 9 | a | $\frac{1}{2} \times 50 \times 8^2$ | 1 | |
| | b | any three from: GPE decreases ; because height (above ground) decreases ; KE increases ; as GPE is converted to KE / energy is conserved ; | 3 | credit "change in GPE not equal to change in KE because some energy is transferred as heat" |
| | | Total | [4] | |

| | | | | |
|--|--|--------------|-------------|--|
| | | Total | [42] | |
|--|--|--------------|-------------|--|

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