

Additional Applied Science A

General Certificate of Secondary Education

Unit **A334/02**: Agriculture and Food

Mark Scheme for June 2012

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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 |
| words | underlined words must be present in answer to score a mark |
| ecf | error carried forward |
| AW/owtte | alternative wording |
| 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

- 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.

Eg

For a one mark question, where ticks in boxes 3 and 4 are required for the mark:

Put ticks (✓) in the two correct boxes.

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

This would be worth 1 mark.

Put ticks (✓) in the two correct boxes.

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

This would be worth 0 marks.

Put ticks (✓) in the two correct boxes.

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

This would be worth 1 mark.

- c. 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, eg 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.

- d. Marking method for tick boxes:

Always check the additional guidance.

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. If there are no ticks, accept clear, unambiguous indications, eg shading or crosses.

Credit should be given for each box correctly ticked. 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.

Eg If a question requires candidates to identify a city in England, then in the boxes

| | |
|--------------------|--|
| Edinburgh | |
| Manchester | |
| Paris | |
| Southampton | |

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 | ✓ | x | ✓ | ✓ | ✓ | | | | ✓ | |
| Paris | | | | ✓ | ✓ | | ✓ | ✓ | ✓ | |
| Southampton | ✓ | x | | ✓ | | ✓ | ✓ | | ✓ | |
| Score: | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | NR |

MARK SCHEME:

| Question | | Answer | Mark | Guidance |
|----------|-----|---|------|---|
| 1 | (a) | 4; 2 | 1 | both answers required |
| | (b) | (i) eat a larger variety of plants (than sheep); more people eat goat/ export potential/wider market | 2 | |
| | | (ii) (sheep) suffer less in high rainfall/ goats suffer more in high rainfall | 1 | reject easier to keep |
| | (c) | any three of: temperature; shelter; food; water; pests; disease/ health; age; gender; genetics; space/exercise | 3 | ignore references to location, weather, climate ignore predators |
| | (d) | (i) selection of animals; collection of sperm; check sperm; storage of sperm/ using liquid nitrogen/frozen; sperm inserted (manually)/ inseminate; into vagina/cervix/womb/uterus; at ovulation | 3 | any three in correct sequence |
| | | (ii) idea of preparation eg book vet; get goats inside; care for baby; help with birth; idea of importance of timing e.g..avoiding bad weather, to coincide with market | 1 | reject organise/ prepare for birth unless qualified |
| | (e) | carries out research; promotes its products/ advertises/ gives information | 2 | |

| Question | | Answer | Mark | Guidance |
|----------|-----|--|------|--|
| 2 | (a) | pollination; fertilisation; germination | 3 | |
| | (b) | (i) answer 10.8% is 2 marks (4/37 x 100) scores 1 mark | 2 | |
| | | (ii) any two of: more energy; more/faster photosynthesis; therefore more food | 2 | |
| | (c) | increase /control carbon dioxide content; increase / control temperature; so increasing photosynthesis | 2 | 2 reasons or 1 reason plus explanation accept increase/control water accept increase/control / use different fertilisers/ nutrients/ minerals accept adding plant hormones |

| Question | | Answer | Mark | Guidance |
|----------|-----|---|------|---|
| 3 | (a) | any two of: reduces dependence on non renewable resources; such as oil; and artificial herbicides and pesticides; since nettle crop replaces itself; owtte | 2 | reference to artificial herbicides/ pesticides must be linked to use of non-renewable resources |
| | (b) | greater supply... price drops; ora greater demand.. can charge more;ora High demand and low supply results in high price scores two marks | 2 | |
| | (c) | either idea of convincing people they won't be stung when sitting on nettle fabric or idea of overcoming marketing problems of a new product.. ie recognition through advertising | 1 | |

| Question | | | Answer | Mark | Guidance |
|--------------|-----|-------|--|-----------|---|
| 4 | (a) | (i) | DNA/gene/plasmid | 1 | |
| | | (ii) | cut (from DNA) | 1 | |
| | | (iii) | contains gene which <u>codes</u> ; for a particular <u>protein</u> called <u>chymosin</u> | 2 | |
| | | (iv) | yeast not eaten/ only its product (chymosin) is eaten | 1 | |
| | (b) | (i) | A - input of nutrients to keep yeast alive; B – cooling jacket -regulating temperature/ prevents overheating; C - adding air/ oxygen/aeration – for respiration | 3 | 1 mark for all three labels without explanation 1 mark for a correct label and explanation 2 marks for three correct labels with one being explained 2 marks for two correct labels each with an explanation |
| | (b) | (ii) | regulate to meet demand/can produce different products/ can make small batches | 1 | |
| Total | | | | 36 | |

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