

Environmental and Land Based Science

General Certificate of Secondary Education

Unit **B491/01/03** Plant Cultivation (Foundation Tier)

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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Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annesley
NOTTINGHAM
NG15 0DL

Telephone: 0870 770 6622
Facsimile: 01223 552610
Email: publications@ocr.org.uk

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

| Annotation | Meaning |
|---|---|
|  | 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

- a. If a candidate alters his/her response, examiners should accept the alteration.
- b. 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 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, 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.

- 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, e.g. 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.

E.g. 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 |

| Question | | CBT Question Numbers | Answer | Mark | Guidance |
|----------|--|----------------------|--|------|--|
| 1 | | 1 | correct pictures matched | 2 | 3 correct = 2 marks 1 correct = 1 mark |
| 2 | | 2 | B place compost in seed tray C sprinkle the seeds A cover the seeds D water the seeds | 2 | one mark for two or three statements correct. two marks for all four statements correct |
| 3 | | 3 | they improve the soil structure they only come from natural sources | 2 | |
| 4 | | 4 | D protects the flower whilst in bud | 1 | |
| 5 | | 5 | the allele for tall plants is dominant; the F1 generation are all tall | 2 | |
| 6 | | 6 | two from: N/nitrate; P/phosphate; K/potassium/potash | 2 | accept magnesium |
| 7 | | 7 | leaves are green/ not yellow/ not brown; leaves are turgid/ upright/ not wilted/ not drooping; no pest damage; no sign of disease | 2 | ignore reference to size/ shape/ number of leaves |
| 8 | | 8 | one from: too much water/ compost waterlogged; lack of water; no oxygen/air; seeds not viable/dead/dormant; seeds buried too deep; wrong temperature; attacked by pest/disease; | 1 | do not accept seeds drowned ignore not enough time |

| Question | | CBT Question Numbers | Answer | Mark | Guidance |
|----------|-----|----------------------|--|------|---|
| 9 | (a) | 9 | to get an average/ conditions will vary each year/results more reliable/ identify anomalous results/outliers | 1 | |
| | (b) | 9 | 6.62 | 1 | accept 6.6175/ 6.6 reject 6.61 |
| | (c) | 10 | colder so fleece had a greater impact greater number of pests/disease and fleece acted as a barrier OWTTE | 1 | |
| | (d) | 10 | how much the fleece costs; readily available; does it take a long time to put down/remove; will it be damaged by animals? | 1 | |
| 10 | (a) | 11 | any three from: dig/turn over the soil; remove (perennial) weeds/stones; add farmyard manure/fertiliser; FYM well rotted; rake/ level the soil; to produce a fine tilth/seed bed | 3 | ignore reference to tools alone |
| | (b) | 12 | A fork | 1 | |
| | (c) | 13 | too wet/damp; too warm; fungal disease/damaged before storage | 1 | |
| | (d) | 13 | any one from: store in a cool place; to prevent fungi/bacteria; store in a dry place; to prevent fungi/bacteria; store in a sealed area; to prevent pests; throw away mouldy ones to prevent spread of disease | 2 | accept dark with qualified reason |
| 11 | (a) | 14 | apples and raspberries; | 1 | |
| | (b) | 15 | £150 million | 1 | |
| | (c) | 16 | 40 times | 1 | |

| Question | | CBT Question Numbers | Answer | Mark | Guidance |
|----------|--|----------------------|--|-----------|--|
| 12 | | 17 | <p>description 1: pollination efficiency/yield was highest when the bees were in a cage; reason 1: the bees had no other food source; description 2: in the open field pollination efficiency was lower; reason 2: the bees could visit other flowers; description 3: when there is a cage and no bees pollination efficiency is lowest; reason 3: there are fewer insects to carry the pollen/bees are the most important pollinator</p> | 3 | max 2 for descriptions max 2 for reasons |
| 13 | | 18 | <p>two from: anthers hanging outside flower; stigmas hanging outside flower; feathery stigma</p> | 2 | <p>accept green flower/not brightly coloured accept no scent</p> |
| 14 | | 19 | <p>wear goggles; pesticide can damage your eyes; read instructions on the pesticide; to determine safe levels of use other PPE eg. suit/gloves; pesticides can damage to skin; wear a mask; prevent breathing in fumes; open the vents/door of the greenhouse; to prevent inhaling fumes make sure no-one else is around/lock the door/put up a keep out sign; check pesticide has a recommendation for the pest and the crop/ follow instructions</p> | 3 | <p>at least one reason is needed for 3 marks ignore reference to spraying distance/ position ignore reference to weather/environmental pollution</p> |
| | | | Total | 36 | |

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

Education and Learning

Telephone: 01223 553998

Facsimile: 01223 552627

Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

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Head office
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Facsimile: 01223 552553

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