

**Environmental and Land Based Science**

General Certificate of Secondary Education

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

**Mark Scheme for January 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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




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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                                      |
| <b>not/reject</b>   | answers which are not worthy of credit                        |
| <b>ignore</b>       | statements which are irrelevant - applies to neutral answers  |
| <b>allow/accept</b> | 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**

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

|                    |  |
|--------------------|--|
| <b>Edinburgh</b>   |  |
| <b>Manchester</b>  |  |
| <b>Paris</b>       |  |
| <b>Southampton</b> |  |

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).

|                    |          |          |          |          |          |          |          |          |          |           |
|--------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| <b>Edinburgh</b>   |          |          | ✓        |          |          | ✓        | ✓        | ✓        | ✓        |           |
| <b>Manchester</b>  | ✓        | x        | ✓        | ✓        | ✓        |          |          |          | ✓        |           |
| <b>Paris</b>       |          |          |          | ✓        | ✓        |          | ✓        | ✓        | ✓        |           |
| <b>Southampton</b> | ✓        | x        |          | ✓        |          | ✓        | ✓        |          | ✓        |           |
| <b>Score:</b>      | <b>2</b> | <b>2</b> | <b>1</b> | <b>1</b> | <b>1</b> | <b>1</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>NR</b> |

| Question |     | CBT | Answer   | Marks | Guidance  |
|----------|-----|-----|--|-------|---|
| 1        | (a) | 1   | plough   | 1     |   |
|          | (b) | 1   | <b>D</b> – spade   | 1     | <b>accept</b> fork  |
| 2        | (a) | 2   | correct organ labelled clearly;<br>S – stigma (1)<br>O – ovule (1)   | 2     |   |
|          | (b) | 3   | insects<br>any one feature:<br>anthers/ stigma are inside the flower/<br>large/colourful/scented petals/petals<br>attract insects;<br>presence of nectar | 1     | no mark for insects alone<br><b>reject</b> if mention wind even if the feature is correct |
| 3        |     | 4   | <b>A</b> – dominant  | 1     |   |
| 4        |     | 5   | <b>C</b> – cropgrow  | 1     |   |
| 5        |     | 6   | any one from:<br>to improve crumb/soil structure/adds<br>humus;<br>to improve water retention/drainage   | 1     | <b>accept</b> soil erosion  |
| 6        |     | 7   | 3.75 (kg)  | 1     |   |
| 7        |     | 8   | <b>D</b> – yellow leaves and stunted growth  | 1     |   |
| 8        |     | 9   | <b>C</b> – rhizome   | 1     |   |

| Question |     | CBT | Answer  | Marks | Guidance  |
|----------|-----|-----|---|-------|---|
| 9        |     | 10  | <b>A</b> cannot hear instructions so may get hurt<br><b>B</b> could break the glass and hurt themselves<br><b>C</b> no PPE so could breathe in dangerous chemicals<br><b>D</b> not bending knees so could hurt their back | 4     | <b>accept</b> any danger associated with hearing but not merely not paying attention<br><b>accept</b> any answer directly related to the greenhouse but not a general statement about hurting themselves<br><br><b>accept</b> dropping object on their feet |
| 10       | (a) | 11  | maize and other vegetables  | 1     | both answers needed for 1 mark  |
|          | (b) | 11  | 14  | 1     |   |
| 11       |     | 12  | in a sealed container/off the floor/ in a fridge/ keep them dry   | 1     | <b>ignore</b> any reference to bacteria<br><b>reject</b> freezer and dark   |
| 12       |     | 13  | grass   | 1     |   |
| 13       | (a) | 14  | 1.5 (months)  | 1     | <b>accept</b> two months, March to April  |
|          | (b) | 14  | 21 (days)   | 1     |   |
|          | (c) | 15  | so the onions grow larger/ less competition   | 1     | <b>accept</b> so the onions have more room to grow/allow each plant to get more water/ minerals/ light  |
|          | (d) | 15  | any one from:<br>prevent infection/growth of bulbs/sprouting/ wet bulbs rot quicker   | 1     |   |
| 14       |     | 16  | <b>A</b> – air movement   | 1     |   |
| 15       |     | 17  | idea of sensor picking up information;<br>idea of computer sending information to open and close the vents  | 2     |   |
| 16       | (a) | 18  | <b>D</b> – warm and moist   | 1     |   |
|          | (b) | 19  | radicle labelled on the bottom right  | 1     |   |

| Question |  | CBT | Answer   | Marks     | Guidance                             |
|----------|--|-----|--|-----------|--------------------------------------|
| 17       |  | 20  | any three from:<br>grows at three or more depths;<br>sows at least three seeds at each depth;<br>determine the number of seeds which germinate;<br>keep all other variables/ named variable the same | 3         | <b>accept</b> growth for germination |
| 18       |  | 21  | any two from:<br>water every day/ keep the soil moist;<br>feed/add fertiliser;<br>dead head flowers/remove dead leaves;<br>check for pests/ spray with pesticide                                     | 2         | <b>ignore</b> reference to light     |
| 19       |  | 22  | turn over soil/ break up large lumps/ make less compact;<br>using a fork;<br>get rid of weeds;<br>using a hoe;<br>remove stones/ level the soil;<br>using a rake                                     | 3         | max 2 marks if only one tool is used |
|          |  |     | <b>Total</b>   | <b>36</b> |                                      |



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