

GCSE

Environmental and Land Based Science

Unit **B681/01**: Management of the Natural Environment (Foundation Tier)

General Certificate of Secondary Education

Mark Scheme for June 2015

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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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1. These are the annotations, (including abbreviations), including those used in scoris, which are used when marking

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

| | |
|---|---|
|  | Blank Page – this annotation must be used on all blank pages within an answer booklet (structured or unstructured) and on each page of an additional object where there is no candidate response. |
|  | 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 |

2. 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 | | | Answer | Mark | Guidance |
|----------|---|----|--|------|--|
| 1 | | | B | 1 | |
| 2 | a | | Two from: changes to the climate; availability of suitable foods; lack of predators; intelligent birds able to adapt to different situations/take advantage of new opportunities. | 2 | A: Adapted to their surroundings |
| 2 | b | | Two from: Population is close to where it first escaped, only breed in the south; the weather is warmer in the south/south east/London; availability of suitable foods; areas of high population which feed the parakeets; mainly based around cities – artificial ecosystems. | 2 | |
| 2 | c | i | 72 000 | 1 | |
| 2 | c | ii | Two of: Decrease in other bird species due to competition; Destruction of local vegetation; expansion of population into new areas Decrease in things the parakeet eats Increase in things that eat parakeets | 2 | |
| 3 | | | Three from: amount of rainfall; amount of sun; soil type/drainage; temperature; activity of animals (such as deer or badgers); human activity/use; the size of plants/species of plants; density of plants | 3 | Wind blow down trees Cold weather- killing plants/animals Air quality/ acid rain qualified |
| 4 | a | | Tertiary consumers: hawk (1) ; Secondary consumers: wren, blue tit, ground beetle (14) ; Primary consumers: vole, moth larvae (99) ; Producers: oak tree (1) ; | 4 | 1 mark for each correct row |

| Question | | Answer | Mark | Guidance |
|----------|---|---|------|---|
| 4 | b | B | 1 | |
| 4 | c | Two from: Decrease in number of moth larvae owtte; more food for the hawk; more competition for food for wrens and/or ground beetles; oak tree might grow bigger (fewer moth larvae eating it) | 2 | |
| 5 | | <p>[Level 3] A well-structured response covering all three areas. All information in answer is relevant, clear, organised and presented in a structured and coherent format. Specialist terms are used appropriately. Few, if any, errors in grammar, punctuation and spelling. (5–6 marks)</p> <p>[Level 2] A structured response covering two areas but the arguments lacks coherency, possibly not laid out in a logical fashion. For the most part, the information is relevant and presented in a structured and coherent format. Specialist terms are used, for the most part, appropriately. There are occasional errors in grammar, punctuation and spelling. (3–4 marks)</p> <p>[Level 1] Answer may be simple statements covering one area. There may be limited use of specialist terms. Errors of grammar, punctuation and spelling prevent communication of the science. (1–2 marks)</p> <p>[Level 0] Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)</p> | 6 | <p>This question is targeted at grades up to E</p> <p>Relevant points include:</p> <p>Requirement to replace existing equipment at the end of its life</p> <p>Large machines can cover an area quicker</p> <p>Fewer staff needed to farm the land – reduction in wages cost</p> <p>New machine might be more fuel efficient</p> <p>Requirement for replacement machine to meet new health and safety regulations/environmental issues</p> <p>Larger machines mean a higher proportion of the field may be farmed</p> <p>Justified arguments for the improvement of soil structure, i.e. fewer passes of soil</p> <p>Statements related to reduction in operation costs/increase in profit to be justified rather than isolated statements.</p> |

| Question | | | Answer | Mark | Guidance |
|----------|---|-----|---|------|---|
| 6 | a | i | 0.9 or 1 | 1 | |
| 6 | a | ii | 900 or 1000 | 1 | Allow ECF |
| 6 | b | i | pH 9 | 1 | |
| 6 | b | ii | Well drained | 1 | |
| 6 | b | iii | Natural England | 1 | |
| 6 | c | | Lack of pesticides/organic growing; grazing not allowed until after the plants have flowered/set seed/late summer; grazing will reduce competition from other plant species; plants are not being dug up/ disturbed by visitors; | 3 | Allow other valid responses. Responses must relate to the information in the guidebook. A: animals will spread seeds A: Looked after more |
| 7 | a | | <p>[Level 3] A well-structured response explaining a range of relevant points from the list opposite that are valid. All information in answer is relevant, clear, organised and presented in a structured and coherent format. Specialist terms are used appropriately. Few, if any, errors in grammar, punctuation and spelling. (5–6 marks)</p> <p>[Level 2] Gives a description of a range of factors affected by the hedge. For the most part, the information is relevant and presented in a structured and coherent format. Specialist terms are used, for the most part, appropriately. There are occasional errors in grammar, punctuation and spelling. (3–4 marks)</p> | 6 | <p>This question is targeted at grades up to C</p> <p>Relevant points include:</p> <p>Physical effects:</p> <p>Shade/ reduced sunlight</p> <p>Reduced wind speed</p> <p>Humidity</p> <p>Reduction in soil water/nutrients due to hedge</p> <p>Frost pockets/shelter from frost</p> <p>Temperature change</p> |

| Question | | Answer | Mark | Guidance |
|----------|---|--|------|--|
| | | <p>[Level 1] Gives a description that includes some factors. Answer may be simplistic. There may be limited use of specialist terms. Errors of grammar, punctuation and spelling prevent communication of the science. (1–2 marks)</p> <p>[Level 0] Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)</p> | | <p>Shelter – affecting water penetration</p> <p>Affect of windbreak on evapotranspiration</p> <p>Increase in humus nearer to hedge due to leaves, etc.</p> |
| 8 | a | 25% clay | 1 | |
| 8 | b | Loam | 1 | |
| 8 | c | Sand 70–85%, silt 0-30% clay 10-15% | 2 | Total must add up to 100% or the full range must be shown for 2 marks |
| 8 | d | Addition of extra clay; addition of organic matter/ humus | 2 | |

| Question | Answer | Mark | Guidance |
|----------|--|------|---|
| 9 | <p>[Level 3] A well-structured response explaining a range of relevant points from the list opposite that are valid. All information in answer is relevant, clear, organised and presented in a structured and coherent format. Specialist terms are used appropriately. Few, if any, errors in grammar, punctuation and spelling. (5–6 marks)</p> <p>[Level 2] Gives a description of a range of factors. List may be focused on one specific aspect. For the most part, the information is relevant and presented in a structured and coherent format. Specialist terms are used, for the most part, appropriately. There are occasional errors in grammar, punctuation and spelling. (3–4 marks)</p> <p>[Level 1] Gives a description that includes some factors. Answer may be simplistic. There may be limited use of specialist terms. Errors of grammar, punctuation and spelling prevent communication of the science. (1–2 marks)</p> <p>[Level 0] Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)</p> | 6 | <p>This question is targeted at grades up to C</p> <p>Relevant points include:</p> <p>Preservation of hedges</p> <p>Pollution control – ensure waste water is not allowed to leach into environment uncontrolled</p> <p>Responsible management of waste</p> <p>Requirement to meet local planning requirements ref vehicle density</p> <p>Do not destroy existing habitats</p> <p>Comply with any specific restrictions on the land</p> <p>Keep away from protected structures</p> <p>Management of where visitors are allowed to roam</p> |

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