



*Rewarding Learning*

**General Certificate of Secondary Education  
2019**

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## **Agriculture and Land Use**

Unit 1  
Soils, Crops and Habitats

**[GAR11]**

**FRIDAY 31 MAY, AFTERNOON**

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**MARK  
SCHEME**

## General Marking Instructions

### Introduction

Mark schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

### The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of students in schools and colleges.

The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes, therefore, are regarded as part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

|          |            |  | AVAILABLE MARKS |
|----------|------------|--|-----------------|
| <b>1</b> | <b>(a)</b> | [1] for each correct answer  |                 |
|          |            | Order is chickweed; docks; creeping buttercup; nettle  | [4]             |
|          | <b>(b)</b> | <b>(i)</b> to reduce competition/example of sunlight or nutrients; improve crop yield/crop growth  | [2]             |
|          |            | <b>(ii)</b> remove by hand/hoe/mechanical method/reseed/top/mow/ <b>approved</b> spray/organic mulch   | [1]             |
|          |            | <b>(iii)</b> saves on spray/costs/time; reduces chance of water pollution; reduces soil erosion; subsidies; natural pest control; more pollinators; financial incentive; improves countryside image; creates habitat | [2]             |
|          |            |  | 9               |
| <b>2</b> | <b>(a)</b> | slurry; manure; yard washings; dairy washings; milk whey; food <b>waste</b> ; crop/vegetable waste   | [2]             |
|          | <b>(b)</b> | reduces reliance on fossil fuels; reduces imports of energy; provides alternative income; creates local employment; waste used as fertiliser; renewable; carbon neutral  | [3]             |
|          | <b>(c)</b> | wind turbines; solar panels; hydroelectric   | [2]             |
|          |            |  | 7               |
| <b>3</b> | <b>(a)</b> | <b>(i)</b> [1] for any two correct bars, [2] for all bars correct; [1] for correct shading   | [3]             |
|          |            | <b>(ii)</b> 2160; –950; 1210 (ecf)   | [3]             |
|          | <b>(b)</b> | temperature; aspect; soil type; soil ph; relief/altitude; nutrient level; terrain/accessibility; wind  | [2]             |
|          | <b>(c)</b> | <b>(i)</b> wetter winters/weather extremes; warmer weather/milder winters; longer growing season   | [1]             |
|          |            | <b>(ii)</b> (dependent on part (i) answer) longer growing season; more crop variety; difficulty harvesting   | [1]             |
|          |            |  | 10              |
| <b>4</b> | <b>(a)</b> | dry weather; maturity of grass; nutrient level of grass; yield/length of grass; ground conditions; time of year; time of day   | [2]             |
|          | <b>(b)</b> | <b>(i)</b> (round) bales; silo/clamp   | [2]             |
|          |            | <b>(ii)</b> colour; smell; moisture level/percentage dry matter; texture   | [2]             |
|          |            |  | 6               |

- 5 (a) loam; clay; sand; hydroponic [4]
- (b) (i) clay [1]
- (ii) soil sieves [1]
- (iii) measure mass of soil at start; heat in warm oven; until constant mass; find difference in mass; correct equation can cover a number of above points [4]
- (c) field drain/shore; spike ground; mole drainer; subsoiler; add lime; plough [2]
- 6 (a) wheat; barley; maize; oats; potatoes; apples; carrots; AVR [2]
- (b) Indicative content:  
**Preparation:** Spray; spread manure/slurry; add lime; cut back hedges; plough; destone; (power) harrow; land leveller; chain harrow; sow seed with seed driller; roll ground; other correct reference to tillage method (max 5)  
**Growing:** fertiliser; herbicide/sprays; pesticides; fungicides; drive along tram lines; monitor crops; use a bird scarer/scarecrow; irrigate if needed; keep livestock out (max 5)

| Band | Response   | Mark    |
|------|--|---------|
| 3    | Candidates demonstrate a detailed and comprehensive knowledge of at least <b>three</b> relevant land preparation (tillage) methods and they describe at least <b>three</b> ways of growing a healthy crop. Quality of written communication is excellent. Relevant material is organised with a high degree of clarity and coherence. Presentation, spelling, punctuation and grammar are of a high standard with appropriate use being made of specialist vocabulary.         | [7]–[9] |
| 2    | Candidates demonstrate a detailed and comprehensive knowledge of at least <b>two</b> relevant land preparation (tillage) methods and they describe at least <b>two</b> ways of growing a healthy crop. Quality of written communication is good. Relevant material is organised with some clarity and coherence. Presentation, spelling, punctuation and grammar are of a reasonable standard to make meaning evident. There is some use of appropriate specialist vocabulary. | [4]–[6] |
| 1    | General statements about growing crops. Quality of written communication is basic. The organisation of material may lack clarity and coherence. Presentation, spelling, punctuation and grammar are at a basic level with little use of appropriate specialist vocabulary.   | [1]–[3] |
| 0    | No creditable comments   | 0       |

[9]

AVAILABLE  
MARKS

12

11

|  |  |         | AVAILABLE MARKS |      |          |      |   |   |         |
|--|--|---------|-----------------|------|----------|------|---|---|---------|
| 7  | (a) <b>A E C D</b> (3/4 correct [2], 1/2 correct [1])  | [2]     | 7               |      |          |      |   |   |         |
|  | (b) (i) herbicide resistance; disease resistance; pest resistance; drought resistance; frost hardiness; better taste; increased nutrition; improved appearance AVP   | [2]     |                 |      |          |      |   |   |         |
|  | (ii) interbreed with native species; resistant/super weeds; disrupts food chain; damaged habitat   | [2]     |                 |      |          |      |   |   |         |
|  | (iii) less spray usage/less water pollution; less water used; reduced carbon footprint; less land needed   | [1]     |                 |      |          |      |   |   |         |
| 8  | (a) (i) wetlands/marsh/river   | [1]     | 4               |      |          |      |   |   |         |
|  | (ii) Curlew; otter; marsh fritillary butterfly; lapwing  | [1]     |                 |      |          |      |   |   |         |
|  | (b) controlled grazing; spread slurry at approved times; minimise the use of fertilisers/slurry; don't spread near waterways; reduce spray use; don't drain land; no tillage; no cutting; fence off  | [2]     |                 |      |          |      |   |   |         |
| 9  | <p>Examples include:<br/> pH; pH probe; Light levels; light/lux meter; Wind speed; anemometer;<br/> Temperature; thermometer; rainfall with a rain gauge; Nutrient levels; soil testing kit; humidity levels; humidity meter</p> <p>Light meters measure light intensity; the meter is held at the soil surface; pointed in the direction of the sun; record results; don't shade the meter with your body</p> <p>Soil pH meters – push the probe into the soil; record result; Clean probe between readings; (pupil can also describe lab test) take repeat measurements and average</p> <p>Temperature with thermometer; place thermometer in the soil; record result; don't have thermometer in direct sunlight</p> <p><b>General and Reliability points</b> – Repeat at several different locations; repeat at different times throughout the day; repeat at different times throughout the year; random sampling to reduce bias</p> |         |                 |      |          |      |   |   |         |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Band</th> <th style="width: 60%;">Response</th> <th style="width: 30%;">Mark</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">3</td> <td>Candidates demonstrate a detailed and comprehensive knowledge and understanding of <b>two</b> abiotic factors and accurately describes how <b>two</b> of them would be recorded. Provide several statements about reliability and validity. Quality of written communication is excellent. Relevant material is organised with a high degree of clarity and coherence. Presentation, spelling, punctuation and grammar are of a high standard with appropriate use being made of specialist vocabulary.</td> <td style="text-align: center;">[7]–[9]</td> </tr> </tbody> </table> |  |         |                 | Band | Response | Mark | 3 | Candidates demonstrate a detailed and comprehensive knowledge and understanding of <b>two</b> abiotic factors and accurately describes how <b>two</b> of them would be recorded. Provide several statements about reliability and validity. Quality of written communication is excellent. Relevant material is organised with a high degree of clarity and coherence. Presentation, spelling, punctuation and grammar are of a high standard with appropriate use being made of specialist vocabulary. | [7]–[9] |
| Band   | Response   | Mark    |                 |      |          |      |   |   |         |
| 3  | Candidates demonstrate a detailed and comprehensive knowledge and understanding of <b>two</b> abiotic factors and accurately describes how <b>two</b> of them would be recorded. Provide several statements about reliability and validity. Quality of written communication is excellent. Relevant material is organised with a high degree of clarity and coherence. Presentation, spelling, punctuation and grammar are of a high standard with appropriate use being made of specialist vocabulary.  | [7]–[9] |                 |      |          |      |   |   |         |

|          |  |                |
|----------|--|----------------|
| <b>2</b> | Candidates demonstrate a detailed and comprehensive knowledge and understanding of <b>two</b> abiotic factors and accurately describe how <b>one</b> of them would be recorded. Provide at least one valid statement about reliability and validity. Quality of written communication is good. Relevant material is organised with some clarity and coherence. Presentation, spelling, punctuation and grammar are of a reasonable standard to make meaning evident. There is some use of appropriate specialist vocabulary. | <b>[4]–[6]</b> |
| <b>1</b> | General statements about measuring abiotic factors and taking readings. Quality of written communication is basic. The organisation of material may lack clarity and coherence. Presentation, spelling, punctuation and grammar are at a basic level with little use of appropriate specialist vocabulary.   | <b>[1]–[3]</b> |
| <b>0</b> | No creditable comments   | <b>0</b>       |

[9]

**Total**

| AVAILABLE MARKS |
|-----------------|
| 9               |
| <b>75</b>       |
|                 |