



**General Certificate of Secondary Education
2022**

Agriculture and Land Use

Unit 1
Soils, Crops and Habitats

[GAU11]

MONDAY 6 JUNE, AFTERNOON

**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.

COVID-19 Context

Given the unprecedented circumstances presented by the COVID-19 public health crisis, senior examiners, under the instruction of CCEA awarding organisation, are required to train assistant examiners to apply the mark scheme in case of disrupted learning and lost teaching time. The interpretation and intended application of the mark scheme for this examination series will be communicated through the standardising meeting by the Chief or Principal Examiner and will be monitored through the supervision period. This paragraph will apply to examination series in 2021–2022 only.

			AVAILABLE MARKS	
1	(a)	order is: potatoes maize wheat barley ([1] for each correct answer)	[4]	10
	(b)	(i) grass; thistles; nettles; docks; AVP	[2]	
		(ii) annuals complete their life cycle in one year	[1]	
	(c)	mechanically control weeds; rotate crops; sow legumes; apply slurry/use manure/compost; encourage natural predators; choose disease/pest resistant crop varieties	[3]	
2	(a)	(i) Correct scale; y-axis title; 2 bars plotted correctly; all bars plotted correctly	[4]	10
		(ii) 5/20 [1] 25% [1] Correct answer = [2] marks	[2]	
	(b)	(i) Any two from: higher protein; higher energy content; less fibre/stalks/easier to digest	[2]	
		(ii) Any two from: more fuel used; more labour; more additive needed; more wear and tear of machinery; animals get less grazing time; more weather risks with four cuts	[2]	
3	(a)	(i) Deciduous	[1]	7
		(ii) Camouflage to avoid predators; claws to climb trees; tail to balance; stores food for winter; fast to avoid predators	[1]	
	(b)	(i) Countryside Management Scheme (CMS)/Environmental Farming Scheme (EFS)/AVP	[1]	
		(ii) oak; hazel; cherry; ash; mountain ash/rowan; beech; alder; willow; birch	[2]	
	(iii) Ecotourism; saleable crop; firewood/biomass; increases biodiversity; creates habitats; boosts image of farming; provides shelter for farm animals; encourages predator species; reduces water runoff/risk of flooding; captures carbon	[2]		
4	(a)	(i) scent, nectaries, sticky pollen, brightly coloured petals, AVP	[1]	7
		(ii) apples/strawberries/raspberries/oil-seed rape/AVP	[1]	
		(iii) Less pollination; so less yield	[2]	
		(iv) beetles/butterflies/AVP	[1]	
	(b)	limit pesticide use; keep bees; grow wildflowers; leave field margins wild; plant more hedges/create habitats;	[2]	

			AVAILABLE MARKS
5	(a) Increases the temperature (of the soil); traps moisture/water (in the soil) (Not light or oxygen)	[2]	8
	(b) Description: decreases yield; Explanation: less minerals/water/space/nutrients for the maize crop	[2]	
	(c) Silo/clamp; round bales	[2]	
	(d) balanced diet; spreads workload out; less risk; mixed ration boosts yield; form of crop rotation	[2]	
6	(a) (i) <u>Special</u> ; <u>Interest</u> (Must be in order)	[2]	
	(ii) unique habitats; large number of habitats; high level of biodiversity; large number of rare species/priority species; winter feeding grounds for animals; archaeological site; AVP	[2]	
	(iii) Lough Neagh; Murlough Bay; Peatlands Park; Foyle Basin; AVP	[1]	
	(b) reduced fertiliser use; reduced spray use; grazing animals at particular times of the year; managing woodland; controlling water levels; managing scrub land; don't overgraze; minimum cultivation/tillage allowed; AVP	[2]	7

7 Indicative Content

Equipment: microwave/oven; balance/scales; thermometer; crucible

Method: weigh soil at start; record mass; heat in warm oven; re-weigh soil; repeat until constant mass;

Calculate: find the difference in mass; divide by the mass of soil at start; $\times 100$;

Band	Response	Mark
3	Candidates demonstrate detailed and comprehensive knowledge and understanding of how to measure soil moisture content. They have identified at least two pieces of equipment and at least three steps to their method and have accurately described how to calculate % soil moisture content. 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 detailed knowledge and understanding of how to measure soil moisture content. They have identified at least one piece of equipment and at least two steps to their method and have described at least one step in the calculation. 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 sampling and measuring moisture content. 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]

9

AVAILABLE
MARKS

- 8 (a) Don't drain land/don't clear sheughs/ditches/block drains; As these will slow the time it takes for water to enter rivers
- plant hedges/trees; plant cover crops/leave stubble in cereal fields; as these will increase the amount of water absorbed into the soil/reduce run off;
avoid soil compaction; as reduces run off [4]
- (b) (i) increased greenhouse effect/global warming; leads to climate change;
more heavy rain/extreme weather [2]
- (ii) use less artificial fertiliser; minimise driving; use renewable energy;
minimise imported feed; farm less intensively; AVP [2]

9 **Indicative Content:**

How it works: plants grow in water/no soil; nutrients added to water; protected environment; artificial lights; extra heat

Advantages: recycles nutrients; easier/cleaner to harvest compared to soil; crops grow quicker; less pests; saves water; less weeds; can be automated; can be set up anywhere; higher yield;

Disadvantages: high capital costs; expensive to run; diseases/pests can spread quickly; not suitable for all crops; expertise/training required

Band	Response	Mark
3	Candidates demonstrate a detailed and comprehensive knowledge and understanding of how hydroponics system works and how yield can be boosted. They have described and explained at least two advantages and one disadvantage. 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 knowledge and understanding of how hydroponics system works and how yield can be boosted. They have described and explained at least one advantage and one disadvantage. Quality of written communication is good. Relevant material is organised with some clarity and coherence. Presentation, spelling, punctuation and grammar are of a high standard with appropriate use being made of specialist vocabulary.	[4]–[6]
1	General statements about hydroponics. 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]

Total

AVAILABLE
MARKS

8

9

75