



Rewarding Learning

**General Certificate of Secondary Education
2025**

Agriculture and Land Use

Unit 1
Soils, Crops and Habitats

[GAU11]

WEDNESDAY 28 MAY, 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.

1 dog rose;
oak;
holly;
hazel [4]

2 (a) the number of different types of plant or animal species in an area [1]

(b) (i)

Action	Impact on biodiversity	
	Increase	Decrease
Plant hedges	✓	
Use herbicides on crops		✓
Prevent soil erosion	✓	
Intensive grazing		✓
Grow the same crop on large scale		✓

[1] for each correct tick [5]

(ii) Any **two** from:
removes land from production;
increased cost;
reduced profit;
expertise needed;
spread diseases from wild animals;
decreased yield [2]

(c) Department of Agriculture, Environment and Rural Affairs/RSPB/
National Trust/AVP [1]

3 (a) warmth;
oxygen;
Any order [2]

(b) (i) radicle/first root (not root);
plumule/first shoot (not shoot)
leaves [3]

(ii) stores energy for the (germinating) plant [1]

(c) (i) LHS: carbon dioxide; RHS (any order) glucose; oxygen [3]

(ii) sun/light [1]

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MARKS

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			AVAILABLE MARKS	
4	(a) (i)	A – topsoil B – subsoil	[2]	8
	(ii)	make proteins (for growth)/constituent of chlorophyll; healthy root/shoot growth; flowering/fruiting/general hardiness/disease resistance	[3]	
	(b) (i)	Any two from: improve soil structure; reduces waste to landfill; reduces the need for artificial fertiliser production; can hold more water; reduce soil erosion	[2]	
	(ii)	no need to buy fertiliser/no cost for disposal of plant waste	[1]	
5	(a)	DNA/genes; transferred from one species to another	[2]	8
	(b)	71.5 / 190.4; 0.3755 x 100; 37.6 %	correct answer gets 3 marks [3]	
	(c) (i)	Any two from: resistant to disease; resistant to pests; increased nutritional content; increased yield; survive more extreme climatic conditions; herbicide tolerance	[2]	
	(ii)	negatively impact biodiversity gene transfer to non-GM species super weeds unknown long term effects negative public perception banned by government	[1]	
6	(a) (i)	Any three from: plough; destoner; power harrow/harrow/cultivator; leveller	[3]	9
	(ii)	testing soil/adding lime/fuel/labour	[1]	
	(b) (i)	better yield/less competition	[1]	
	(ii)	Any two from: extra cost; increased quality; increased yield; reduced fertiliser runoff	[2]	
	(c)	Any two from: vermin proof shed; cool; dark; correct moisture/humidity	[2]	

- 7 Effects of climate change on weather:
- warmer **winters**/milder **winters**;
 - wetter **winters**;
 - more drought/drier **summers**;
 - more unsettled weather/unpredictable/extreme weather/described;
 - warmer **summers**
 - (more) flooding

Effects on crop production:

- more soil erosion;
- floods damage crops;
- more pests/diseases;
- difficult to harvest/plant/sow;
- less yield/more yield explained/crops destroyed;
- wider range of crops grown

Ways farmers can reduce their carbon footprint:

- growing crops for biomass;
- increased woodland planting/hedge planting/create wild areas/don't drain wetlands;
- less **artificial** fertilisers;
- use dribble bar/slurry injection/trailing shoe;
- energy saving lights/LEDs/sensor lights;
- use renewable energy/solar panels/wind turbines/bio-digester;
- reduce energy use on the farm/reduce machinery use/insulate sheds;
- reduce animal numbers/farm less intensively

Band	Response	Mark
3	Candidates demonstrate a detailed and comprehensive knowledge and understanding of how climate change affects agriculture. Candidates include at least seven marking points to include one effect on weather, one effect on crop production and one way to reduce carbon footprint. 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 an adequate knowledge and understanding of how climate change affects agriculture. Candidates include at least four marking points to include one effect on weather, one effect on crop production and one way to reduce carbon footprint. 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	Candidates make general statements linked to the process of climate change and agriculture. 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]
	No creditable comments	[0]

AVAILABLE
MARKS

		[9]	9
8	(a) (i) ammonia/ammonium	[1]	
	(ii) A – nitrogen fixation; B – feeding/ingestion C – nitrification	[3]	
	(b) (i) denitrifying	[1]	
	(ii) Description — crop yield decreases; Explanation — any two from: nitrates converted to nitrogen; less nitrates (not less nitrogen); less protein; less growth	[2]	
	(iii) waterlogged/anaerobic/flooded	[1]	9

9 Pollination:

- transfer of pollen;
- from an anther;
- to a stigma;
- by an insect

Insect-pollinated flower has:

- anthers inside the flower;
- stigma inside the flower;
- scent;
- coloured petals;
- nectar;
- sticky pollen grains;
- less pollen grains;

(allow converse for wind pollinated flower as long as stated)

Ways to increase bee population:

- not using pesticides;
- more organic farming;
- more mixed farming;
- creating suitable habitats/bee hives;
- planting wild flowers;
- leave field margins;
- unimproved grassland

Band	Response	Mark
3	Candidates demonstrate a detailed and comprehensive knowledge and understanding of insect pollination. Candidates include two steps in the process of pollination, three differences between an insect and a wind-pollinated flower and two ways farmers can increase the bee population. 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 and understanding of insect pollination. Candidates include one step in the process of pollination, two differences between an insect and a wind-pollinated flower and one way farmers can increase the bee population. 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	Candidates make general statements linked to the process of pollination. 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]
	No creditable comments	[0]

[9]

Total

AVAILABLE
MARKS

9

75