



**General Certificate of Secondary Education  
2017**

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## **Agriculture and Land Use**

Unit 1  
Soils, Crops and Habitats

**[GAL11]**

**FRIDAY 26 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	
1	(a)	Order is Hazel, Hawthorn, Holly, Oak 1 mark for each correct answer	[4]	5
	(b)	Shelter from weather; prevent contact with other herd; prevents spread of disease; alternative food source	[1]	
2	(a)	A plant that produces a harvest every year/lives for many years/lives more than two years	[1]	8
	(b) (i)	Any living factor	[1]	
		diseases/bacteria/fungi; other plants/competition/weeds; pests; grazing/trampling	[2]	
	(c) (i)	A crop that is grown for energy accept grown to produce electricity	[1]	
		oilseed rape; willow; miscanthus/elephant grass; sugar/fodder beet; grass/silage Any valid point	[2]	
		Energy saving lights/using renewable energy/reduce energy use on farm/heat exchanger/less chemical usage Any suitable example	[1]	
3	(a) (i)	9.0	[1]	9
		$(11 - 7) = 4$ [1]    tonnes/hectare [1]	[2]	
	(b)	[1] for each of: correct scale on y-axis; any 2 bars correct; other 2 bars correct; correct shading	[4]	
	(c)	more reliable yield; less costs/less sprays/shorter growing season/cycle; less chance of weather damage; disease/pest damage less likely; spreads out workload; used in crop rotation	[2]	
4	(a) (i)	A – Topsoil, B – Subsoil	[2]	10
		A	[1]	
		uptake of water; uptake of nutrients; support of plant/anchorage	[2]	
	(b) (i)	use wide/flotation tyres; plan your driving route; use a pad; no driving over field in wet weather	[2]	
		ploughing/subsoiling/aerating/mole-draining/draining/spiker	[1]	
	(c) (i)	7	[1]	
Lime/calcium carbonate/limestone/magnesium carbonate		[1]		

			AVAILABLE MARKS	
5	(a)	soil, water, lettuce, potatoes	[4]	
	(b) (i)	Cloche; polytunnel; cold frame; plastic film/floating mulch	[1]	
	(ii)	Any <b>two</b> from each		
		Advantages: More yield; longer growing season; less water used; more heat; less nutrients lost; can control environment; greater range of crops; more efficient use of space; harvesting does not depend on weather		
		Any valid point	[2]	
		Disadvantages: Less natural pollinators; set-up cost; maintenance costs; more labour/management needed; need to irrigate; disease spreads rapidly/disease and pests can build up		
		Any valid point	[2]	
	(c) (i)	Potassium	[1]	
	(ii)	The relative <b>proportions/ratio</b> of each nutrient (accept references to percentages) Not "amount/level"	[1]	11
6	(a) (i)	Smell; colour; squeeze test; texture/amount of stalks or seed heads; don't accept taste	[3]	
	(ii)	Higher DM/more energy/harvested later/more fibre/described difference in storage	[1]	
	(b) (i)	In order C (given) D E A B (3/4 = 2 marks, 1/2 for 1 mark)	[2]	
	(ii)	to make sure <b>all</b> water/moisture has been removed	[1]	
	(iii)	54/150 [1]      × 100 = 36% [1]	[2]	9
7	(a)	<b>Plants</b> Belt transect/measuring tape; quadrat; lay tape out; every set distance; identify plant species using key; record plant species; estimate % cover;		
		<b>or</b>		
		Quadrat; two tape measures technique for random quadrat placing (do not accept throw over shoulders)/Divide area into grid squares; repeat over several places; identify plant species using key; record plant species		
		<b>Animals</b> Pitfall trap; lid/stone; top of cup level with ground; wait 24 hours; identify the species using a key; record animal species; release animals; repeat with several traps		
		<b>or</b>		
		Pooter/suction device; collect leaf litter or soil in container; repeat over several areas; identify the species; record animal species; release animals Other suitable method, e.g. sweepnet; moth trap (described)		

**increase biodiversity**

leave field margins uncut; don't use fertiliser/spray;

plant trees/hedges; build pond; rewild area

Any valid point

AVAILABLE  
MARKS

Band	Response	Mark
3	Candidates should list a habitat, name the equipment used for both plants and animals. Demonstrate a detailed and comprehensive description of <b>two</b> different relevant methods that measure the biodiversity of plant and animal species in an area. Provide a <b>method</b> to improve biodiversity. 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 should list a habitat, demonstrate a detailed knowledge and description of <b>two</b> different methods that measure the biodiversity of plant and animal species in an area. 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 species. 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

- 8 (a) As **Temperature** increases so does the rate of **photosynthesis**; until it reaches a peak 26 °C to 28 °C/or 3.1 arbitrary units photosynthesis/ then rate decreases [3]
- (b) amount of carbon dioxide; light intensity; available water; humidity levels; chlorophyll [2]

5

9 Suitable Crop – potatoes, apples, wheat, barley, grass  
Any valid response

AVAILABLE  
MARKS

Methods

Approved sprays/manually/mechanically control weeds; rotate crops/reseed; use manure/compost instead of artificial fertilisers; encourage natural pest control by encouraging predators; choose only disease/pest resistant crop varieties; AVP

Advantages

Increases biodiversity/helps wildlife; less chance of water pollution; higher price for crops/perceived healthier for crop; better soil structure; less money spent on sprays; less residues on food

Disadvantages

Less yield; more prone to diseases and pests; market can be limited; time taken to become organic; labour intensive; slower growing; more paperwork

Band	Response	Mark
3	Candidates should list <b>one</b> crop, demonstrate a detailed and comprehensive knowledge and understanding of at least <b>two</b> relevant methods that allow the successful growing of organic crops. They describe <b>one</b> advantage and <b>two</b> disadvantages to growing crops organically. 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 should list <b>one</b> crop, demonstrate a detailed knowledge and understanding of at least <b>one</b> relevant method that allows the successful growing of organic crops. They describe <b>one</b> advantage and <b>one</b> disadvantage to growing crops organically. 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 farming organically with <b>one</b> advantage. 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

**Total**

**75**