



**General Certificate of Secondary Education
2018**

Agriculture and Land Use

Unit 1
Soils, Crops and Habitats

[GAR11]

TUESDAY 29 MAY, MORNING

**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)	curlew, barn owl, lapwing, yellowhammer (In order down the page, [1] for each)	[4]	6	
	(b)	endangered species/identified as needing protection/near extinction	[1]		
	(c)	grassland/field edges/open countryside (not barn)	[1]		
2	(a)	Air = 25% [1], Organic matter = 5% [1], Rock particles = 45% [1]	[3]	13	
	(b) (i)	20	[1]		
		(ii) Sand = 57% [1] Silt = 26% [1]	[2]		
	(c)	Any three from: retains water/poor drainage; slow to heat up; retains nutrients; small particle size; heavy soil	[3]		
	(d)	method of drying soil; weigh mass of (dry) soil; method of burning soil/heat strongly; to constant mass; weigh soil at end; organic matter = difference in mass; correct % calculation may get [3]	[4]		
3	(a) (i)	oxygen; heat (not 'temperature')	[2]	9	
		(ii) in order (B given): D C B A E (3–4 correct = [2], 1–2 correct = [1])	[2]		
	(a) (iii)	Any two from: seed is too deep and runs out of energy; seed is too shallow and dries out; is eaten; seed may need light to germinate; seed is too shallow and may be washed away	[2]		
		(b)	apple, potato, carrots, wheat, barley, (no mark given for crop) storage: vermin proof shed; cool; "correct" humidity; dark processing: grading; drying/cleaning of produce where applicable; milling distribution: appropriate packaging; relevant transport detail		[3]
		(c)	Any two from: dock; nettle; chickweed AVP		[2]
4	(b)	a plant that completes its life cycle in two years	[1]	11	
	(c) (i)	A: petal, B: ovary/carpel C: filament/stamen	[3]		
		(ii) Any three from: sticky pollen; anthers inside the flower; stigma inside the flower; nectar present; pleasant smell; bright petals;	[3]		
	(d)	Any two from: plough; power harrow/harrow/cultivator; land leveller; Cambridge roller; front press (not seed drill)	[2]		

		AVAILABLE MARKS
5	<p>(a) phosphate; nitrogen; potassium (in order) ([1] each) [3]</p> <p>(b) (i) agronomist; crop scientist; agri-sales; AVP [1]</p> <p>(ii) Any two from: eutrophication; reduced yield; extra cost; wastage; reduced quality/grows 'rank' scorching of leaves (or roots) [2]</p> <p>(iii) 5:10:10 [1]</p> <p>peas produce own nitrates [1] P and K needed in larger quantities than N [1] [3]</p> <p>(c) Different plants grown one after the other on the same field</p> <p>Advantages: breaks cycle of pests/stops build-up of diseases and fungus/helps replenish nitrogen/different amount of nutrients used up each time/saves on sprays</p> <p>Disadvantages: requires more knowledge/more specialised equipment/less profitable crop grown/certain crops may not grow [3]</p>	12

6 (a) (i) willow; miscanthus; grass; silage (not vegetables/cereal crops) [1]

(ii) (Duplicate answers will only be given credit once, even if they appear in separate sections) (AVP for other crops, answers below for willow)

Suitable site: facing sun to maximise growth; marginal ground; clear of weeds/other vegetation; damp/heavy soil; ease of harvesting marginal ground/land not suitable for crops

Advantages: renewable; saves use of fossil fuels, can be planted on marginal ground; less impact on global warming, carbon neutral; income; creates jobs; decreases imports of energy; high yield; creates habitats; minimum maintenance

Disadvantages: large quantities needed/produces less heat than coal (per unit mass); land used for biomass cannot be used for crops; only harvest after 3 years; can ruin field drainage; specialist equipment needed to harvest; price can drop

Band	Response	Mark
3	Candidates demonstrate a detailed and comprehensive knowledge and understanding of one feature that makes a suitable site for a named crop. They accurately describe and explain three advantages and two disadvantages of growing their chosen crop. Quality of written communication is excellent. Relevant material is organised with a high degree of clarity of 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 one feature that makes a suitable site for a named crop. They accurately describe and explain two advantages and one disadvantage of growing their chosen 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 energy 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

10

- 7 (a) rising plate meter; measures height of grass; ≥ 10 readings; avoid trampled areas; use formula;
or
 gathering herbage: quadrat; random sampling; collect grass; weigh; multiply by area of field
 Or other method [3]
 (not % grass cover)
- (b) Any **two** from:
 help future planning of stock; to stop overgrazing of paddocks; arrange contractors/help planning of winter feed; ensure grass doesn't grow 'rank' or seed/prevent undergrazing; fertiliser management [2]

AVAILABLE
MARKS

5

8 Ways to improve Biodiversity

plant trees/forest/hedge; with native species; create a wetland/reedbed; leave field margins/strips of land between crops unfarmed/to nature; reduce use of sprays/turn farm organic; leave drainage ditches/sheughs open; install bird/bat boxes; leave stubble/crop residue on ground after harvest; farm a variety of crops and animals on the land; farm less intensively

Advantages of Biodiversity

financial incentives/grants from the EU; DAERA; promote wildlife on their farm; improves image of farm/help promote ecotourism; provide natural pest control; extra planting prevents soil erosion

Disadvantages of Biodiversity

removes land from production; increased cost; reduced profit; expertise needed; spread diseases from wild animals; decreased yield/increased competition from weeds

Band	Response	Mark
3	Candidates demonstrate a detailed and comprehensive knowledge of two relevant ways biodiversity can be improved. They accurately describe two advantages and two disadvantages of increasing 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 demonstrate a detailed knowledge of one relevant way biodiversity can be improved. They must describe one advantage and one disadvantage of increasing biodiversity. 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 improving biodiversity. 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