



Rewarding Learning

**General Certificate of Secondary Education
2024**

Agriculture and Land Use

Unit 1
Soils, Crops and Habitats

[GAU11]

THURSDAY 23 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.

1 (a)

AVAILABLE
MARKS



Yellowhammer



Barn Owl



Lapwing



Curlew

[4]

Sources © Getty Images

			AVAILABLE MARKS
	(b) Agriculture; Environment; Rural	[3]	
	(c) Any three from: plant trees and hedges; create a wetland/create named habitat; leave field margins; farm less intensively; leave stubble on the ground after harvest; farm a variety of crops and animals on the land; install bird boxes; leave drainage ditches open; reduce use of sprays/turn farm organic.	[3]	10
2	(a) A – water; B – rock particles	[2]	
	(b) (i) temperature/nutrient (holding capacity)	[1]	
	(ii) loam	[1]	
	(c) Any four from: weigh dry soil sample; heat strongly/burn/temperature over 400°C; to constant mass; record final mass of soil sample; find difference in mass.	[4]	8
3	(a) (i) X – plumule Y – cotyledon	[2]	
	(ii) food store	[1]	
	(iii) Seeds may dry out/seeds may be washed away/eaten by birds	[1]	
	(b) Roots – Any one from: absorbs water, anchors plant; absorbs minerals/nitrates; [1] Stem – Any two from: supports plant; transports water/minerals; transports sugar; [2]	[3]	7
4	(a) placed in the dark; 48 hours for two days	[2]	
	(b) (i) iodine	[1]	
	(ii) yellow-brown; blue-black	[2]	

		AVAILABLE MARKS
(c)	(i) green part of the leaf shaded	[1]
	(ii) chlorophyll present; photosynthesis occurred	[2]
5	(a) Any three from: Rising plate meter; Measures height of grass; More than 10 readings; Random sampling (W-shape) use formula; Or Gather herbage method: Quadrat; random sampling; more than 10 readings; collect grass; weigh; Multiply by area of a field	[3]
	(b) docks/chickweed/creeping buttercup	[1]
	(c) silage/haylage	[1]
	(d) Any three from: spray; plough; power harrow; land leveller; destone	[3]
6	(a) (i) $\frac{13.2}{42.4}$; × 100; = 31.132 (any accuracy); 31	[4]
	(ii) suitable scale; Y axis correctly labelled; Bars plotted correctly ([2] marks)	[4]
	(b) Any two from: increased woodland planting; less artificial fertiliser usage; energy saving lights; using renewable energy; insulation; lights on timer/sensor	[2]
7	Three organic methods from: • Organic seeds; • Crop chosen should be pest and disease resistant • Crop rotation; • Sprays need to be approved; • Weeds removed manually; • Manure used instead of artificial fertilisers; • Natural pest control methods used/described;	
		8
		8
		10

Three advantages from:

- Helps biodiversity/wildlife;
- Higher price for the crop;
- Less chance of water pollution;
- Less money spent on sprays;
- Less residues on food/perceived healthier;

Two disadvantages from:

- Less yield;
- More pest/disease damage;
- Labour intensive/explained e.g. takes more labour to remove weeds;
- Market can be limited;
- More paperwork for farmer

Band	Response	Mark
3	<p>Candidates demonstrate a detailed and comprehensive knowledge and understanding of organic farming by giving a minimum of 7 points to include two organic methods used to manage the crop, two advantages of growing the crop organically and two disadvantages of growing the crop organically.</p> <p>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.</p>	[7]–[9]
2	<p>Candidates demonstrate a detailed and comprehensive knowledge and understanding of organic farming by giving a minimum of 4 points to include one organic method used to manage the crop, one advantage of growing the crop organically and one disadvantage of growing the crop organically.</p> <p>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 being made of specialist vocabulary.</p>	[4]–[6]
1	<p>General statements provided about organic farming methods and advantage/disadvantage of it.</p> <p>Quality of written communication is basic. The organisation of the material lacks clarity and coherence. Presentation, spelling, punctuation and grammar are at a basic level with little use of specialist vocabulary.</p>	[1]–[3]
0	No creditable comments	[0]

[9]

AVAILABLE
MARKS

9

		AVAILABLE MARKS
8	<p>(a) Convert ammonia; To nitrates</p>	[2]
	<p>(b) Soil – A Explanation – any three from: most denitrifying/denitrification; less nitrogen to nitrates/more nitrates to nitrogen; least nitrogen-fixing/nitrogen fixation; less nitrates/protein for growth of crop</p>	[1] [3]
9	<p>Method to estimate the number of plant species:</p> <ul style="list-style-type: none"> • belt transect/measuring tape; • quadrat; • place quadrat every set distance; • identify plant species using key; • record plant species; <p>Or</p> <ul style="list-style-type: none"> • random sampling/two tape measures at right angles; • quadrat; • random coordinates; • repeat quadrat sampling; • identify plant species using a key; • record plant species <p>Named abiotic factor, equipment and method</p> <p>pH;</p> <ul style="list-style-type: none"> • pH probe; • push probe into soil; • record result; • repeat and average <p>Or</p> <p>Light;</p> <ul style="list-style-type: none"> • light meter; • meter held at soil surface/point in direction of the sun; • record result; • repeat and average <p>Or</p> <p>Wind speed;</p> <ul style="list-style-type: none"> • anemometer; • position in the direction of the wind; • record result; • repeat and average <p>Or</p> <p>Temperature;</p> <ul style="list-style-type: none"> • thermometer; • place in the soil; • record result; • repeat and average 	6

Band	Response	Mark
3	<p>Candidates demonstrate a detailed and comprehensive knowledge and understanding of sampling a habitat by giving at least 7 points to include; three steps to estimate the number of plant species; one named abiotic factor; two steps to measure the named abiotic factor.</p> <p>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.</p>	[7]–[9]
2	<p>Candidates demonstrate a detailed and comprehensive knowledge and understanding of sampling a habitat by giving at least 4 points to include; two steps to estimate the number of plant species; and one step to measure an abiotic factor.</p> <p>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 being made of specialist vocabulary.</p>	[4]–[6]
1	<p>General statements provided about sampling a habitat. Quality of written communication is basic. The organisation of the material lacks clarity and coherence. Presentation, spelling, punctuation and grammar are at a basic level with little use of specialist vocabulary.</p>	[1]–[3]
0	No creditable comments	[0]

[9]

Total

AVAILABLE MARKS
9
75