



Rewarding Learning

**General Certificate of Secondary Education
2022**

Agriculture and Land Use

Unit 2

Animals on the Land

[GAU21]

MONDAY 20 JUNE, AFTERNOON

**MARK
SCHEME**

General Marking Instructions

Introduction

Mark schemes are intended to ensure that the GCSE examinations are marked consistently and fairly. The mark schemes provide markers with an indication of the nature and range of candidates' responses likely to be worthy of credit. They also set out the criteria which they should apply in allocating marks to candidates' responses.

Assessment objectives

Below are the assessment objectives for GCSE Agriculture and Land Use.

Candidates must:

- recall, select, and communicate their knowledge and understanding of agriculture and land use in the environment and land-based industries (AO1);
- apply skills, knowledge and understanding of agriculture and land use in the environment and land-based industries and other contexts (AO2); and
- analyse and evaluate evidence, make reasoned judgements and draw conclusions based on evidence (AO3).

Quality of candidates' responses

In marking the examination papers, examiners should be looking for a quality of response reflecting the level of maturity which may reasonably be expected of a 16-year-old which is the age at which the majority of candidates sit their GCSE examinations.

Flexibility in marking

Mark schemes are not intended to be totally prescriptive. No mark scheme can cover all the responses which candidates may produce. In the event of unanticipated answers, examiners are expected to use their professional judgement to assess the validity of answers. If an answer is particularly problematic, then examiners should seek the guidance of the Supervising Examiner.

Positive marking

Examiners are encouraged to be positive in their marking, giving appropriate credit for what candidates know, understand and can do rather than penalising candidates for errors or omissions. Examiners should make use of the whole of the available mark range for any particular question and be prepared to award full marks for a response which is as good as might reasonably be expected of a 16-year-old GCSE candidate.

Awarding zero marks

Marks should only be awarded for valid responses and no marks should be awarded for an answer which is completely incorrect or inappropriate.

Marking Calculations

In marking answers involving calculations, examiners should apply the 'own figure rule' so that candidates are not penalised more than once for a computational error.

Types of mark schemes

Mark schemes for tasks or questions which require candidates to respond in extended written form are marked on the basis of levels of response which take account of the quality of written communication.

Other questions which require only short answers are marked on a point for point basis with marks awarded for each valid piece of information provided.

Levels of response

Tasks and questions requiring candidates to respond in extended writing are marked in terms of levels of response. In deciding which level of response to award, examiners should look for the 'best fit' bearing in mind that weakness in one area may be compensated for by strength in another. In deciding which mark within a particular level to award to any response, examiners are expected to use their professional judgement. The following guidance is provided to assist examiners.

- **Threshold performance:** Response which just merits inclusion in the level and should be awarded a mark at or near the bottom of the range.
- **Intermediate performance:** Response which clearly merits inclusion in the level and should be awarded a mark at or near the middle of the range.
- **High performance:** Response which fully satisfies the level description and should be awarded a mark at or near the top of the range.

Quality of written communication

Quality of written communication is taken into account in assessing candidates' responses to all tasks and questions that require them to respond in extended written form. These tasks and questions are marked on the basis of levels of response. The description for each level of response includes reference to the quality of written communication.

For conciseness, quality of written communication is distinguished within levels of response as follows:

Level 1: Quality of written communication is basic.

Level 2: Quality of written communication is good.

Level 3: Quality of written communication is excellent.

In interpreting these level descriptions, examiners should refer to the more detailed guidance provided below:

Level 1 (Basic): The candidate makes only a limited selection and use of an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

Level 2 (Good): The candidate makes a reasonable selection and use of an appropriate form and style of writing. Relevant material is organised with some clarity and coherence. There is some use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning clear.

Level 3 (Excellent): The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is widespread and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a sufficiently high standard to make meaning clear.

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	<p>(a) (i) grass/silage – X; concentrates – Y; (accept meal) maize (silage) – Z;</p> <p>(ii) X/grass/silage;</p> <p>(iii) cheapest; readily available; good source of energy; easiest to grow;</p> <p>(b) (i) Named example of mineral;</p> <p>(ii) minerals maintain good animal health/specific function from list below; for healthy blood system/red blood cells/prevent anaemia; for bone and teeth development/reduces chance of milk fever/support milk production;</p> <p>AVP</p>	<p>[3]</p> <p>[1]</p> <p>[2]</p> <p>[1]</p> <p>[1]</p>	8
2	<p>Any two from but not limited to:</p> <p>tractor; tractor could move/run off and crush operator or pedestrian/crash into obstacle/topple over; ensure brakes and handbrake is used and working/proper training/don't drive across a steep hill/ensure seatbelt is worn</p> <p>cutting discs; could damage limbs; turn tractor off when inspecting equipment/ lower power harrow to the ground</p> <p>AVP</p>	<p>[6]</p>	6
3	<p>(a) Crop: storage of food; gizzard: mechanical breakdown of food/grinds up food;</p> <p>(b) (i) Any two from: high egg laying rate; good temperament; egg quality; colour of shell; size of egg; quick maturing hen; longevity; disease resistant;</p> <p>(ii) age/sexual maturity; health of animal; body condition; light levels/day length; diet</p> <p>(c) (i) 21 days;</p> <p>(ii) Any two from: temperature; oxygen level; turning; humidity; hygiene;</p> <p>(iii) Any two from: good hygiene of equipment/good hygiene of workers; screening of eggs; vaccination of laying stock; screening of laying stock; house sterilisation;</p>	<p>[2]</p> <p>[2]</p> <p>[1]</p> <p>[1]</p> <p>[2]</p> <p>[2]</p>	10

			AVAILABLE MARKS	
4	(a)	(i) 42 – 3 kg = 39 kg [1]; /150 [1]; 260 Correct answer [3] (280 gets $\frac{2}{3}$, 0.26 gets $\frac{2}{3}$)	[3]	12
		(ii) Y-axis label and scale; X-axis label; 3 points plotted correctly; other 3 points plotted correctly; smooth curve drawn;	[5]	
	(b)	(i) Steeper curve; finishing at higher weight; (must start between 2–10 kg)	[2]	
		(ii) Any two from: higher costs; too much fat on lambs; poaching of ground around feeder; lambs overweight; more labour; meal scour/acidosis;	[2]	
5	(a)	9000 (6000 – 13 000)	[1]	5
	(b)	Any four from: more concentrates/inputs needed; cows kept indoors for more of the year; feed silage all year/zero grazing; cows milked more often; higher stocking density; robotics used; AI/commercial breeds; short calving interval;	[4]	
6	(a)	Any two from: Organic material (named example) is fed; into a sealed tank; contents are mixed/macerated; bacteria; produces methane; gas is burned to produce heat/drive a generator;	[2]	6
		(b)	Any three from: Advantages: renewable energy; payments; creates local jobs; carbon neutral fuel; produces fertiliser; reduces use of fossil fuels; reduces odour of animal waste; reduces waste going to landfill;	
		Any three from: Disadvantages: high capital costs; less crops grown for food; expertise required to operate; can break down; requires a large site;	[4]	

7 (a) In order: vaccines; digestive; purple combs; culled;

[4]

(b) Any **three** symptoms from:

swollen udder/red udder; clots/blood in milk; lower milk yield; raised temperature; sunken eyes; lack of appetite; increased SCC/BCC increased; not alert

Any **two** treatments from:

stripping; antibiotics (not just tubing); heat treatment/udder rubs; electrolytes;

Any **three** preventions from:

predipping/washing teats/postdipping; good parlour hygiene/washing hands; good cubical hygiene/bedding; quarantine infected animals/milk separately; cull chronic cases/good record keeping; pulsation/milking parlour maintenance; robotic milker/no over or under-milking; cluster flushing between cows; good diet; vaccine;

Any **three** impacts from:

increased vet costs/drug costs; loss of stock; more labour/time; less profit;

Band	Response	Mark
3	Candidates demonstrate a detailed and comprehensive knowledge of mastitis. They should include at least two symptoms, one treatment, two ways to prevent the disease and two impacts on the farm business. 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 of mastitis. They should include at least one symptom, one treatment, one way to prevent the disease and one impact on the farm business. 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.	[4]–[6]
1	General statements about mastitis. 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.	[1]–[3]
	No creditable comments.	[0]

[9]

AVAILABLE
MARKS

13

- 8 (a) choose parents with desirable traits; breed with each other; choose the best offspring; repeat process over several generations; [2]
- (b) Any **two** from:
check the animals regularly; provide water/feed; tracking system; provide rests; transporter authorisation; vehicle inspection; [2]

AVAILABLE
MARKS

4

9 (a) Any **two** from:
Freedom from –
pain/injury/disease; hunger/thirst; fear/distress; discomfort; [2]

(b) Any **four** ways from:
activity/stimulus/toy to occupy them; not isolated; space to move and rest/
outdoor access; appropriate lighting; bedding; **free** farrowing system;

Any **four** health assessments from:
alertness; animal with others; mobility; breathing; faeces/look for scour;
condition/weight; appetite; skin colour; colour of mucous membrane; colour
of urine; regular checks

Any **three** suggestions from:
premium paid/quality assurance schemes (named scheme); shorter finishing
time; less rejections at slaughter; fewer inspections; no fines imposed; less
disease; better quality meat; positive public image; less aggressive pigs;
larger litters;

Band	Response	Mark
3	Candidates demonstrate a detailed and comprehensive knowledge and understanding of at least two practical ways to ensure pigs have freedom to express normal behaviour, three ways to assess general health, and two benefits to the farmer of maintaining high welfare standards. 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 at least one practical way to ensure pigs have freedom to express normal behaviour, then give two ways to assess general health and one benefit to the farmer of maintaining high welfare standards. 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.	[4]–[6]
1	General statements provided about the welfare of pigs. 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.	[1]–[3]
	No creditable comments.	[0]

[9]

Total

AVAILABLE
MARKS

11

75