Rewarding Learning

General Certificate of Secondary Education
2015

Agriculture and Land Use

Unit 2

Animals on the Land

[GAL21]

FRIDAY 29 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

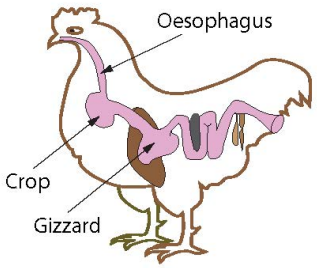
Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of students in schools and colleges.

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.

			AVAILABLE MARKS
1	**(a)**	 © CCEA [3]	
	(b)	Crop: food/water stored Oesophagus: transports food Gizzard: grind down food [3]	6
2	**(a)**	Correct order is: 1. foot baths 2. teat washing 3. drenches 4. internal parasites (4 × [1]) [4]	
	(b)	Any **two** from: • transporter authorisation • competence certification • vehicle approval • fitness of animal for transport • feed and water available (at suitable intervals) • animal movement forms • limit on transport time/specified breaks • reference to comfort/ventilation/welfare Accept appropriate description of above Accept alternative appropriate response [2]	
	(c)	Any **three** from: • appropriate reference to secure storage • store at correct temperature (e.g. fridge) • (follow) withdrawal periods • keep out of reach of children • appropriate reference to correct disposal • appropriate reference to personal protection • correct dosage • record of dosage/medicines • correct method of administration [3]	9

					AVAILABLE MARKS
3	(a)	(i)	Any **two** from: • milk yield/productivity • lean meat gain/productivity • milk quality • meat quality • egg yield/productivity • double muscles • conformation • hardiness • longevity • fertility • ease of calving Accept alternative appropriate response	[2]	
		(ii)	Cattle example: Hereford/Friesian/Jersey/alternative appropriate response [1] Poultry example: Rhode Island Red/Sussex/alternative appropriate response [1]	[2]	
		(iii)	Any **two** from: • preservation of breeding stock • preserve gene pool/prevent extinction • example of specific traits • disease resistance • reference to market trends	[2]	
	(b)	(i)	A = ovary B = uterus C = vulva (accept vagina)	[3]	
		(ii)	Disadvantage Advantage Advantage 3 correct [2] 1 or 2 correct [1]	[2]	
	(c)		Any **two** from: • warm; colostrum helps raise the body temperature • rich in nutrients; contains all the essential components of the newborn animal's diet/general health benefits • antibodies; increased immunity	[4]	15

				AVAILABLE MARKS
4	**(a)**	**(i)**	Definition: DMI is a measure of the animal's food intake/dried weight of feedstuffs; Explanation: allows comparison of different feeds/it reduces variation in feeds with different moisture content [2]	
		(ii)	$\frac{30}{100} \times 40$; 12; correct answer gets full marks [2]	
	(b)		Lambed ewe – 4 Yearling beef heifer – 8 [2]	6
5	**(a)**		A = calved/start of lactation B = peak milk yield C = dry/end of lactation [3]	
	(b)		10 months [1]	
	(c)		month 2 [1]	5

AVAILABLE MARKS

6 **(a)** Any **two** from:
- Pedometers
- Yield mapping
- GPS
- Computer recording systems/use of APHIS online
- Robotic milking parlours
- Electronic tags/collars
- Appropriate alternative example [2]

(b) Indicative content

Discussion of how each technology is used including its advantages:

Pedometers/other sensors
- Fitted to the animal's leg (pedometer example)
- Any jumping/mounting activity register on a log/relayed to the farm office computer/smartphone
- Detects animals on heat/unwell
- Detects giving birth

GPS
- Records location
- Records accurate/reliable/ precise information
- Allows more efficient/targeted use of inputs/fertiliser/sprays
- Records historical data yields

Camera
- Can monitor animals remotely
- Detect if animals unwell/giving birth/on heat
- Security

Electronic ID tags/collars
- Identification of stock
- Adjusting feed
- Administering medicine
- Monitors health
- Checked easily with scanner/reader

Other possible advantages (depending on technology described)
- Automatic system which records data continuously/remote access (via computer tor smartphone)
- Saves time for farmers/much less observation time required by farmer/ saving labour time
- Reduced physical/manual work
- Improved accuracy
- increased efficiencies described, e.g. reduced inputs/bigger profit margins/cost effective
- Secure storage of information
- Better data analysis

Disadvantages
- Costs (of set-up/to run)
- Data requires careful interpretations/training required
- Loss of data if computer crash/power failure
- Can be difficult to fix (when there's a problem)/dependent on external support if problems
- Some farmers resistant to change

Band	Response	Mark
3	Candidates demonstrate a detailed and comprehensive knowledge and understanding of **two** agricultural technology examples. Candidates apply their specific knowledge of the technologies to comprehensively discuss the technologies' functions, including the main advantages and suggest at least one disadvantage of each technology. 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 **two** agricultural technology examples discussing the technologies' functions and briefly discuss advantages and/or disadvantages of each technology. 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 agricultural technology examples are made with no specific advantages or disadvantages discussed. 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

11

Notes:

- maximum of 5 points credited to each technology
- If same advantage/disadvantage given for each technology, only credited once

				AVAILABLE MARKS
7	**(a)**	**(i)**	Any **two** from: • slurry • manure • plastic • fertiliser • oil/fuel • spoiled feed • dirty water/yard water/run-off • (silage) effluent • waste/rejected milk • Alternative appropriate response [2]	
		(ii)	Nitrates Directive/Waste Framework Directive/ European Water Framework Directive [1]	
	(b)		Any **three** from: • Waste water moves through the pond system • Waste water passes through the reeds root system • (Aerobic) bacteria break down waste • Reeds take up nutrients • Water comes (progressively) cleaner as it passes through the different ponds/reduced BOD [3]	
	(c)	**(i)**	1100 – 200; = 900 mg/l [2] correct answer gets full marks allow [1] if one incorrect graph reading and subtraction correct (e.c.f)	
		(ii)	between inlet and pond 1 (outlet) [1]	
		(iii)	inlet: bloodworms/leeches ponds: mayfly nymphs/dragonfly nymphs [2]	11
8	**(a)**		Mastitis -----dairy cow (accept sheep) Fluke------sheep (accept dairy cow) Salmonella-----poultry Pneumonia-----pigs (accept dairy cow or sheep) 4 correct = [3] 3 correct = [2] 1/2 correct = [1] [3]	
	(b)		Indicative content **effects on cows:** • lesions grow in the lungs • cough/laboured breathing • lose condition/lose interest in food • cough up blood **effects on farms:** • major financial loss to a farm business • affects sale of cattle • farmers have to cull animals affected (can also be accepted as a point under 'how the government helps to prevent TB') • loss of breeding stock • (surrounding) farms have to be tested • easily transmitted/new animals to be quarantined	

the impact on the agricultural economy:
- millions(£) spent each year on control measures/difficult to control
- money spent on compensation to farmers
- very difficult to eradicate
- affects trade of animals/animal products/pricing

how the government helps to prevent the spread of TB:
- national schemes of testing
- restricted movement of animals/biosecurity/secure fencing
- advisory support/education
- research on disease

Band	Response	Mark
3	Candidates demonstrate a detailed and comprehensive knowledge and understanding of the effects of TB and analyse its impact on the agricultural economy. Candidates apply their specific knowledge of TB to describe at least **three** effects of the disease and explain at least **two** ways it impacts on the economy and describe at least **one** way the government helps to prevent the spread of TB. 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 the effects of TB and explain its impact on the agricultural economy. Candidates describe at least **two** effects of TB and **two** ways it impacts on **either** the agricultural economy or how the government helps to prevent the spread of TB. 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	Candidates make general statements about TB. 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

12

75