RECOGNISING ACHIEVEMENT

GCSE

Environmental and Land Based Science

General Certificate of Secondary Education

Unit **B682/01** Plant Cultivation and Small Animal Care (Foundation Tier)

Mark Scheme for January 2013

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

Annotations

Used in the detailed Mark Scheme:

Annotation	Meaning
/	alternative and acceptable answers for the same marking point
(1)	separates marking points
not/reject	answers which are not worthy of credit
ignore	statements which are irrelevant - applies to neutral answers
allow/accept	answers that can be accepted
(words)	words which are not essential to gain credit
words	underlined words must be present in answer to score a mark
ecf	error carried forward
AW/owtte	credit alternative wording / or words to that effect
ORA	or reverse argument

Available in scoris to annotate scripts:

	indicate uncertainty or ambiguity
BOD	benefit of doubt
CON	contradiction
	incorrect response
ECF	error carried forward
	draw attention to particular part of candidate's response
NBOD	no benefit of doubt
R	reject
	correct response

L1 , L2 , L3	indicate level awarded for a question marked by level of response
^	information omitted

Subject-specific Marking Instructions

a. Accept any clear, unambiguous response (including mis-spellings of scientific terms if they are *phonetically* correct, but always check the guidance column for exclusions).

b. Crossed out answers should be considered only if no other response has been made. When marking crossed out responses, accept correct answers which are clear and unambiguous.

e.g. for a one-mark question where ticks in the third <u>and</u> fourth boxes are required for the mark:

This would be worth 1 mark.

This would be worth 0 marks.

This would be worth 1 mark.

c. The list principle:
If a list of responses greater than the number requested is given, work through the list from the beginning. Award one mark for each correct response, ignore any neutral response, and deduct one mark for any incorrect response, e.g. one which has an error of science. If the number of incorrect responses is equal to or greater than the number of correct responses, no marks are awarded. A neutral response is correct but irrelevant to the question.

d. Marking method for tick-box questions:

If there is a set of boxes, some of which should be ticked and others left empty, then judge the entire set of boxes.
If there is at least one tick, ignore crosses and other markings. If there are no ticks, accept clear, unambiguous indications, e.g. shading or crosses. Credit should be given according to the instructions given in the guidance column for the question. If more boxes are ticked than there are correct answers, then deduct one mark for each additional tick. Candidates cannot score less than zero marks.

e.g. if a question requires candidates to identify cities in England:

Edinburgh	
Manchester	
Paris	
Southampton	

the second and fourth boxes should have ticks (or other clear indication of choice) and the first and third <u>should be blank</u> (or have indication of choice crossed out).

Edinburgh			✓			✓	✓	✓	✓	
Manchester	✓	×	✓	✓	✓				✓	
Paris				✓	✓		✓	✓	✓	
Southampton	✓	×		✓		✓	✓		✓	
Score:	**2**	**2**	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**NR**

e. For answers marked by levels of response:

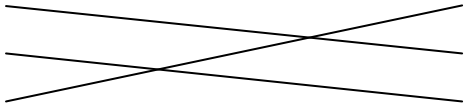
i. **Read through the whole answer from start to finish**
ii. **Decide the level** that **best fits** the answer – match the quality of the answer to the closest level descriptor
iii. **To determine the mark within the level**, consider the following:

Descriptor	Award mark
A good match to the level descriptor	The higher mark in the level
Just matches the level descriptor	The lower mark in the level

iv. Use the **L1**, **L2**, **L3** annotations in Scoris to show your decision; do not use ticks.

Quality of Written Communication skills assessed in 6-mark extended writing questions include:

- appropriate use of correct scientific terms
- spelling, punctuation and grammar
- developing a structured, persuasive argument
- selecting and using evidence to support an argument
- considering different sides of a debate in a balanced way
- logical sequencing.

Question			CBT Q No	Answer	Marks	Guidance
1	(a)		1	**B** geranium	1	
	(b)		2	**D** water loss	1	
2			3		2	2 marks all correct 1 mark 1 – 1 correct
3	(a)	(i)	4	spraying with herbicide	1	
		(ii)	4	£471	1	
	(b)		5	bees are needed for pollination/ bees collect the pollen	1	Reference to pollen/pollination or a description of the process is needed
	(c)		6	biological is using one organism to control another; non biological is using chemicals to control pests	2	

Question			CBT Q No	Answer	Marks	Guidance
4	(a)		7	**Level 3 (5–6 marks)** Shows a very detailed understanding of the process of selective breeding. States a good range of characteristics that have been bred into tomatoes with reasons. Quality of written communication does not impede communication of the science at this level. **Level 2 (3–4 marks)** Shows a detailed understanding of selective breeding. States some characteristics that have been bred into tomatoes with reasons. Quality of written communication partly impedes communication of the science at this level. **Level 1 (1–2 marks)** Shows a limited understanding of the process of selective breeding. States a characteristic that has been bred into tomatoes with a reason or some characteristics if no reason is given. Quality of written communication impedes communication of the science at this level. **Level 0 (0 marks)** Insufficient or irrelevant science. Answer not worthy of credit.	6	**Relevant scientific detail:** • Tomato plants with required characteristics bred together • Offspring with the best characteristics selected • Repeated over many generations **A reference to GM to produce new tomato varieties** **Relevant characteristics and explanations:** • Yield to increase profit; • Taste to make them more palatable • Appearance so people are more likely to eat / buy them; • Hardiness so they can be grown outdoors / in cooler climates; • Disease resistance to reduce losses
	(b)		8	mutation	1	
	(c)		9	red and tall	1	
5	(a)		10	Nitrogen - N, Phosphorus - P, Potassium - K	1	**A** either name or symbol
	(b)		11	6.5; the nutrients need to be dissolved in water / soluble; for plants / roots to absorb them.	3	

Question			CBT Q No	Answer	Marks	Guidance
	(c)		12	Two from: burns the roots; scorching; reverse osmosis; restricts growth; grass grows tall and spindly; grass becomes yellow/brown.	2	**A** It kills the grass **I** different colour

Question			CBT Q No	Answer	Marks	Guidance
6	(a)		13	Two from: Pet; companionship/comfort; security/safety; exercise; breeding; competition; hearing/seeing dog;	2	**A** working dog/named working dog
	(b)		13	Two from: releases an egg; stop Sandy getting pregnant; so that she does not come into contact with male dogs/mate;	2	**I** reference to safety
7	(a)		14	**B** an external parasite	1	
	(b)		15	Three from: appetite; activity; toilet habits/faeces; behaviour; eyes; nose; fur; mouth/teeth; temperature; presence of parasites; body shape; blood test;	3	**I** reference to veterinary procedures

Question			CBT Q No	Answer	Marks	Guidance
8	(a)		16	**Level 3 (5–6 marks)** Provides a very detailed description of how to set up an incubator. Describes how the eggs are turned during incubation and how they are candled. Gives a full explanation for each procedure. Quality of written communication does not impede communication of the science at this level. **Level 2 (3–4 marks)** Provides a detailed description of how to set up an incubator. Describes how the eggs are turned during incubation and how they are candled. Gives an explanation for most of the procedures. Quality of written communication partly impedes communication of the science at this level. **Level 1 (1–2 marks)** Provides a limited description of how to set up an incubator. Mentions either how eggs are turned or how they are candled. Explains at least an aspect of the procedure. Quality of written communication impedes communication of the science at this level. **Level 0 (0 marks)** Insufficient or irrelevant science. Answer not worthy of credit.	6	**Relevant description and explanation:** • Correct temperature (36-39^{O}C) set using thermostat. To allow enzymes to work and chick development • Correct humidity (50-60%) achieved by keeping the reservoir full and spraying the eggs with water. To prevent eggs drying out • Clean eggs using a dry cloth to prevent contamination • Either mark eggs with a cross and turn manually or ensure that the rocker is working and the eggs are turning automatically. To prevent chicks deformed • Candle the eggs after 10 days to check they are fertile • Discard any infertile eggs/cracked eggs to prevent cross infection • Leave eggs for 21 days (for hens) • Three days before hatching stop turning eggs / switch off rocker and increase humidity so that the shell is not too brittle Assume information refers to hens eggs unless otherwise stated
	(b)	(i)	17	37.5^{0}C large eggs have a greater hatching % at 36.5 / lower temperature/ fewer large eggs hatch at this temperature	2	
		(ii)	17	use more than 20 eggs; use eggs of the same age; from same breed; kept at same humidity; eggs with no cracks; free from dirt; greater range of temperatures; greater range of egg masses	2	**A** repeat experiment

Question			CBT Q No	Answer	Marks	Guidance
9	**(a)**	**(i)**	**18**	4%	1	
		(ii)	**18**	40g	1	
	(b)		**19**	**Level 3 (5–6 marks)** Provides a very detailed comparison of the two foods to include most of the constituents and relevant values; Correct detailed identification of the target animals; Quality of written communication does not impede communication of the science at this level. **Level 2 (3–4 marks)** Provides a detailed comparison of the two foods to include some of the constituents and some reference to a piece of data from the label; Correct identification of the target animals; Quality of written communication partly impedes communication of the science at this level. **Level 1 (1–2 marks)** Provides a limited comparison of the two foods to include a constituent of the feedstuffs; Correct identification of one of the target animals; Quality of written communication impedes communication of the science at this level. **Level 0 (0 marks)** Insufficient or irrelevant science. Answer not worthy of credit.	6	**Relevant comparative points include:** • Feedstuff B contains more protein than A, 16% compared to 12% • Feedstuff B contains twice as much oil as A. • Feedstuff B contains more calcium / iron than A • Feedstuff A and B contain the same quantities of fibre and vitamins **Identification of target animals:** Young rabbit / lactating female requires • High protein for growth / repair • High oil for energy / insulation • High calcium for bones • High iron for efficient oxygen carriage in the blood Maintenance ration for mature rabbit requires • smaller quantities of protein, oil, calcium and iron • similar quantities of fibre to aid movement of food through the digestive tract • similar trace quantities of vitamins for general health
10			**20**	**C** hold the snake tightly to prevent it escaping	1	
				Total	**50**	

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