



GCSE

Environmental and Land Based Science

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

General Certificate of Secondary Education

Mark Scheme for June 2018

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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.














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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	alternative wording
ORA	or reverse argument

Available in RM Assessor to annotate scripts

	indicate uncertainty or ambiguity
	benefit of doubt
	contradiction
	incorrect response
	error carried forward
	draw attention to particular part of candidate's response
	draw attention to particular part of candidate's response
	draw attention to particular part of candidate's response
	no benefit of doubt
	reject
	correct response
	draw attention to particular part of candidate's response
	information omitted

Subject-specific Marking Instructions

- a. If a candidate alters his/her response, examiners should accept the alteration.
- 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 boxes 3 and 4 are required for the mark:

Put ticks (✓) in the
two correct boxes.

✗
✗

This would be worth
1 mark.

Put ticks (✓) in the
two correct boxes.

✓
✗

This would be worth
0 marks.

Put ticks (✓) in the
two correct boxes.

✗
✗
✓
✓

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 boxes:

Always check the additional guidance.

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. If there are no ticks, accept clear, unambiguous indications, e.g. shading or crosses.

Credit should be given for each box correctly ticked. 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 a city in England, then in the boxes

Edinburgh	
Manchester	
Paris	
Southampton	

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

Edinburgh			✓			✓	✓	✓	✓	
Manchester	✓	x	✓	✓	✓				✓	
Paris				✓	✓		✓	✓	✓	
Southampton	✓	x		✓		✓	✓		✓	
Score:	2	2	1	1	1	1	0	0	0	NR

Question			Answer	Marks	Guidance
1	a		any two from: size; shape; long shelf-life; thick skins; appearance; colour; taste;	2	any reasonable suggestion
	b	i	Dominant	1	
		ii	F1	1	
	c		Breeding two organisms of the same species/different breeds/ has characteristics of two different tomato plants; offspring perform better than either parent; more disease resistant/more productive/more vigorous	2	Accept - reference to shape and colour
2	a		substances formed from plants/animals; natural/no <u>added</u> chemicals	1	Reject – no chemicals
	b		chicken manure; it contains the most NPK/nutrients/named N	2	
	c		any two from: improves crumb structure; improves water retention; slow nutrient release; encourages soil fauna/adds microbes; contains micronutrients/names micronutrient; recycles waste; eat organic produce;	2	
3	a		Box 1: 6CO ₂ Box 2: 6O ₂	1	
	b		A	1	
	c		any two from: fast rate of photosynthesis; denaturation of enzymes happens at 35°C; cost of heating is less; less water loss/not wilt; other limiting factors	2	Accept – too hot the plants might die
	d		any two from: water; nutrients/fertiliser; light; pH; growing medium/soil type; CO ₂	2	Reject sun

Question		Answer	Marks	Guidance
4	a	bottom left box is ticked	1	
	b	any three from: lipids (fats) decreased; sugars increased; lipids changed from 50% to 20%; sugars changed from 5% to 15%	3	
4	c	<p>[Level 3] A detailed description of the roles of water, oxygen and temperature in germination, with scientific explanation. Quality of written communication does not impeded communication of the science at this level. (5-6 marks)</p> <p>[Level 2] A description of the role of water, oxygen and temperature in germination. Quality of written communication partly impedes communication of the science at this level. (3-4 marks)</p> <p>[Level 1] A description of the role of water, oxygen or temperature in germination. Quality of written communication impedes communication of the science at this level. (1-2 marks)</p> <p>[Level 0] Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)</p>	6	<p>This question is targeted at grades up to C</p> <p>Indicative scientific points may include:</p> <p>Water:</p> <ul style="list-style-type: none"> • Water enters the seed (causing the cotyledons) to swell (and the testa) to burst • The plumule and radicle/ root and shoot are able to grow • Water is needed to make the food store soluble (so that it can be used in respiration/cell metabolism) <p>Oxygen:</p> <ul style="list-style-type: none"> • Oxygen is used to respire • Energy released (by respiration is used for growth of the plumule and radicle) <p>Temperature:</p> <ul style="list-style-type: none"> • Enzymes • Catalyse reactions/ respiration • Break dormancy <p>Use the L1, L2, L3 annotations in RM Assessor; do not use ticks</p>

Question			Answer	Marks	Guidance
5	a		1. A 2. D 3. B 4. C	1	all three correct for mark
	b		8	1	
	c		tick in box next to “external parasite”	1	

Question		Answer	Marks	Guidance
5	d	<p>[Level 3] A detailed description of general ill health together with specific knowledge about indications of external parasites. A detailed explanation of how good husbandry practices can prevent infestation from occurring. Quality of written communication does not impede communication of the science at this level. (5-6 marks)</p> <p>[Level 2] A description of general ill health together with some knowledge about indications of external parasites. A description of how good husbandry practises can prevent infestation from occurring. Quality of written communication partly impedes communication of the science at this level. (3-4 marks)</p> <p>[Level 1] A limited description of general ill health or a description of good husbandry practices. Quality of written communication impedes communication of the science at this level. (1-2 marks)</p> <p>[Level 0] Insufficient or irrelevant science. Answer not worthy of credit. (0 credits)</p>	6	<p>This question is targeted at grades up to C</p> <p>Indicative scientific points include:</p> <p>General signs of ill health:</p> <ul style="list-style-type: none"> • listless • not eating • dull eyes / fur • changes to faeces <p>Indications of external parasites:</p> <ul style="list-style-type: none"> • scratching • evidence of maggots • loss of fur • accumulation of faeces on tail • wet fur around anus <p>Good husbandry practices:</p> <ul style="list-style-type: none"> • clean and disinfect living area regularly • check the animal regularly for signs of ill health • groom the animal regularly • specific routines e.g. <ul style="list-style-type: none"> - remove faeces from rear end - treat for diarrhoea - use of pesticides to deter flies <p>Use the L1, L2, L3 annotations in RM Assessor; do not use ticks</p>

Question			Answer	Marks	Guidance
6	a	i	4	1	
		ii	£1	1	
	b		any one from: buying Mushu; buying cage; vet bills; electricity bills; bedding; pet insurance	1	ALLOW any suitable answer
	c		for (strong) bones/teeth	1	

Question			Answer	Marks	Guidance
7			<p>[Level 3] A very detailed description of the similarities and differences in the housing and how it is suitable for these small animals. Quality of written communication does not impede communication of the science at this level. (5-6 marks)</p> <p>[Level 2] A detailed description of how the housing is suitable for small animals with some reference to the information in the photographs. Quality of written communication partly impedes communication of the science at this level. (3-4 marks)</p> <p>[Level 1] A limited description of how the housing is suitable for small animals. Quality of written communication impedes communication of the science at this level. (1-2 marks)</p> <p>[Level 0] Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)</p>	6	<p>This question is targeted at grades up to E</p> <p>Indicative scientific points may include: General points (similarities):</p> <ul style="list-style-type: none"> • housing should be big enough for the number of animals • housing should be secure • there is a container for food and water where necessary • objects to keep the animals entertained and exercised • housing can be taken apart to clean it easily <p>Specific features (differences):</p> <ul style="list-style-type: none"> • Vivarium <ul style="list-style-type: none"> ▪ basking lamp for warmth ▪ UV light for production of vitamin D ▪ Heat mat ▪ Glass walls ▪ Sand on the floor • Hamster cage <ul style="list-style-type: none"> ▪ nest box and nesting material ▪ exercise wheel ▪ wire cage • Aviary <ul style="list-style-type: none"> ▪ perch ▪ cuttlefish for calcium / grit for digestion ▪ wire cage ▪ toys and mirrors <p>Use the L1, L2, L3 annotations in RM Assessor; do not use ticks</p>
8	a		shine a light through it; to see if it is fertile/has been fertilised;	2	Accept – see whether there is a chick inside
	b		ring around 7 days	1	
	c		any one from: meat; eggs; showing; pet	1	Any suitable answer

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