



# **GCSE**

## **Environmental and Land Based Science**

**Unit B683/01:** Commercial Horticulture, Agriculture and Livestock Husbandry (Foundation Tier)

General Certificate of Secondary Education

### **Mark Scheme for June 2014**

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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.

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These are the annotations, (including abbreviations), including those used in scoris, which are used when marking

Annotation	Meaning of annotation
	Blank Page – this annotation <b>must</b> be used on all blank pages within an answer booklet (structured or unstructured) and on each page of an additional object where there is no candidate response.
	Tick
	Cross
	Unclear
	Blank Page – this annotation <b>must</b> be used on all blank pages within an answer booklet (structured or unstructured) and on each page of an additional object where there is no candidate response.
	Benefit of doubt
	Effective evaluation
	Level 1
	Level 2
	Level 3
	Level 4
	Not answered question
	Own figure rule
	Noted but no credit given
	Too vague
	Omission

**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.

<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

Put ticks (✓) in the  
two correct boxes.

<input type="checkbox"/>
<input type="checkbox"/>
<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>
<input type="checkbox"/>

Put ticks (✓) in the  
two correct boxes.

<input checked="" type="checkbox"/>
<input type="checkbox"/>

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 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	✓	✗	✓	✓	✓	✓			✓	
Paris				✓	✓		✓	✓	✓	
Southampton	✓	✗		✓		✓	✓		✓	
Score:	2	2	1	1	1	1	0	0	0	NR

## MARK SCHEME:

Question		Answer	Mark	Guidance
1		<b>A</b> Beech <b>B</b> Acer <b>C</b> Cherry <b>D</b> Birch	3	all correct = 3 marks 2 or 3 correct = 2 marks 1 correct = 1 mark
2	a	For photosynthesis (accept to produce food)	1	
2	b	Any two from water, nutrients, correct temperature and a suitable growing medium, carbon dioxide, oxygen.	2	Accept warmth , minerals
2	c	Increase – provide electric lights, clean glass Decrease- provide shading, blinds , cool glass	2	
3		A. side-wheel ,electric OR rotary B. side-wheel, rotary OR petrol C. hover, rotary OR petrol D. cylinder, petrol	4	max 4 marks each mower to have two labels for each mark
4		P / phosphate / $P_2O_5$	1	
5	a	Silty should be 100Kg/ha	1	
5	b	9600; $9600/10000 \times 125 = 120(\text{kg})$	2	1 mark for correct area 9600 award 2 marks for correct answer no working
6	a	<b>Advantages.</b> Can be moved out off/into greenhouse for protection; Can be changed when display has finished; less susceptible to slugs, damage; movable for display, containment of invasive plants <b>Disadvantages.</b> Need more watering; more feeding; cost of pot / compost; need potting on; roots restricted.	4	Maximum three advantages or disadvantages
6	b	Any compost with suitable reason e.g. Peat based because it is lighter and easier to move. Soil based as it retains nutrients better	1	no mark for name of compost only Accept environmental reasons

Question		Answer	Mark	Guidance
7		<p><b>[Level 3]</b>  Explains a good range of the physical and behavioural features of both healthy and unhealthy animals  Quality of written communication does not impede communication of the science at this level.  (5 – 6 marks)</p> <p><b>[Level 2]</b>  Explains some physical and behavioural features of either healthy or unhealthy animals.  Quality of written communication partly impedes communication of the science at this level.  (3 – 4 marks)</p> <p><b>[Level 1]</b>  Describes some of the features of healthy or unhealthy animals.  Quality of written communication impedes communication of the science at this level.  (1 – 2 marks)</p> <p><b>[Level 0]</b>  Insufficient or irrelevant science. Answer not worthy of credit.  (0 marks)</p>	6	<p><b>This question is targeted at grades up to E</b></p> <p><b>Indicative scientific points may include:</b></p> <ul style="list-style-type: none"> <li>Physical features such as eyes, coat , stance, droppings, urine frequency, vomiting, outward signs of illness, growth / production rates, difficulty of movement</li> <li>Behavioural features such as level of activity, feeding / drinking, alertness, unusual / unexpected aggression, vocalisation, listlessness</li> </ul> <p><b>Use the L1, L2, L3 annotations in Scoris; do not use ticks</b></p>

Question		Answer	Mark	Guidance
8	a	25,600	1	Allow 25,601
8	b	<p>Biological because the predator eats the pest before they can reach these numbers, better for the environment /organic/no residue on crop</p> <p>Chemical because it needs to act fast to stop rapid population growth, kills all the pests</p>	1 1	<p>Do not accept does not kill other animals /does not harm plants</p> <p>Whichever method is described the reason must fit with the chosen method</p> <p>Accept general advantages of biological/ chemical control</p>

Question		Answer	Mark	Guidance
9		<p><b>[Level 3]</b>  Explains the main stages in such a way that someone following it could carry out the procedure safely.  Quality of written communication does not impede communication of the science at this level.  (5 – 6 marks)</p> <p><b>[Level 2]</b>  Explains the main stages in the correct sequence with some omissions in the procedure, safety or sequence.  Quality of written communication partly impedes communication of the science at this level.  (3 – 4 marks)</p> <p><b>[Level 1]</b>  Describe some of the main stages with omissions in procedure, safety or sequence  Quality of written communication impedes communication of the science at this level.  (1 – 2 marks)</p> <p><b>[Level 0]</b>  Insufficient or irrelevant science. Answer not worthy of credit.  (0 marks)</p>	6	<p><b>This question is targeted at grades up to D</b></p> <p><b>Indicative scientific points may include:</b></p> <ul style="list-style-type: none"> <li>• Planning the job / risk assessment</li> <li>• Wearing PPE</li> <li>• Pre walking the route to check for hazards</li> <li>• Checking for possible escape routes</li> <li>• Not working alone</li> <li>• Talking through the job with co-workers</li> <li>• Correct method to approach the animal</li> <li>• Working calmly and confidently so as not to upset the animal</li> <li>• Safely moving the animal into new location</li> <li>• Using equipment such as pig boards halters nose restraints etc.</li> <li>• Ensure the pig is secure in new location</li> <li>• Put away equipment</li> <li>• Remove PPE, clean, store appropriately</li> <li>• Wash hands</li> </ul> <p><b>Use the L1, L2, L3 annotations in Scoris; do not use ticks.</b></p>

Question		Answer	Mark	Guidance
10	a	15 tubs needed 1 mark £270	2	ecf
10	b	Super Sup – High protein for the growing baby and for milk production High calcium for bone formation in the baby and milk production High magnesium to prevent hypomagnesaemia / grass staggers High vitamin content to support growth of healthy embryo / baby High sugar for energy	3	No mark for name of supplement If super sub not given accept reasons if correct Max 2 marks if no explanations
11		The cow is on heat / ovulating 1 mark. This tells the farmer that the cow is ready for mating / AI. 1 mark. If he misses this date he will have to wait till the next time the cow is on heat / loss of milk production / 1 mark	3	

Question		Answer	Mark	Guidance
12		<p><b>[Level 3]</b> Explains in detail the range of different methods a farmer could use to improve the milk yield of the herd. Quality of written communication does not impede communication of the science at this level. (5 – 6 marks)</p> <p><b>[Level 2]</b> Explains with some omissions the methods that could be used to improve the milk yield of the herd. Quality of written communication partly impedes communication of the science at this level. (3 – 4 marks)</p> <p><b>[Level 1]</b> Describes some ways the farmer could improve the milk yield of the herd. Quality of written communication impedes communication of the science at this level. (1 – 2 marks)</p> <p><b>[Level 0]</b> Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)</p>	6	<p><b>This question is targeted at grades up to C</b></p> <p><b>Indicative scientific points may include:</b></p> <p><b>Feeding</b></p> <ul style="list-style-type: none"> <li>• Careful feeding to production levels. Could include the role of protein &amp; minerals.</li> <li>• Good water supply</li> <li>• feeding ad lib/palatable food – to encourage cows to eat sufficient for production</li> <li>• hormones in feed – to trigger milk</li> </ul> <p><b>Breeding</b></p> <ul style="list-style-type: none"> <li>• Age of cows – replacing low yielding older cows</li> <li>• Blood lines – using bulls with proven high yielding offspring</li> <li>• selective breeding for milk production</li> </ul> <p><b>General management</b></p> <ul style="list-style-type: none"> <li>• Environment – warm, restricting movement</li> <li>• features to improve comfort of cows</li> <li>• Health of the animals – sick cows produce less milk (particularly mastitis)</li> <li>• Handling to reduce stress – stressed produce less milk</li> <li>• more frequent milking – increases total daily yield</li> <li>• Make sure cows calve annually</li> <li>• Regular time of time for milking</li> </ul> <p><b>Use the L1, L2, L3 annotations in Scoris; do not use ticks.</b></p>

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