

Additional Applied Science A

General Certificate of Secondary Education

Unit **A334/01**: Agriculture and Food

Mark Scheme for January 2012

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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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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 scoris 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.

Eg

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, eg 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, eg 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.

Eg 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	Mark	Guidance
1	(a)	<p>...be fertilised <input type="checkbox"/></p> <p>....be pollinated <input type="checkbox"/></p> <p>...germinate <input checked="" type="checkbox"/></p> <p>...photosynthesise <input type="checkbox"/></p> <p>...rot <input checked="" type="checkbox"/></p>	2	if more than 2 ticks deduct 1 mark /extra tick, no negative marks
	(b)	980	1	
	(c)	water/moisture/ damp oxygen	2	any two ignore light ,temperature, suitable temperature accept minerals/nutrients, warmth/heat accept humid for two marks
	(d)		4	2 marks for each side for each side 2 or 3 lines correct = 2 marks 1 line correct = 1 mark

Question		Answer	Mark	Guidance
	(e)	(links light and carbon dioxide to) photosynthesis; (Links photosynthesis to) food/ glucose; for growth/ development	2	any two
2	(a)	dairy <input type="checkbox"/> horticulture <input type="checkbox"/> intensive <input checked="" type="checkbox"/> arable <input type="checkbox"/>	1	if more than one tickno marks
	(b)	ethical answer e.g. not natural/normal,no freedom, space, kept in cages, not fair on fish, cruelty; environmental answer eg not sustainable, affects natural ecosystem	1	reject shorter life of fish, killing fish is wrong
	(c)	temperature; diseases/ health; pests	2	any two accept age; gender; species; space; accumulation of waste; oxygen levels, genetics; pH; pollution; clean water exercise/movement; stress
	(d)	selection (of characteristic; animals) breeding/reproduce/mate; select offspring with desired characteristics; repeating for many generations	3	

Question		Answer	Mark	Guidance
3	(a)	aseptic <input type="checkbox"/>	1	if more than one tick.. no marks
		gathered <input checked="" type="checkbox"/>		
		microorganisms <input type="checkbox"/>		
		whole <input type="checkbox"/>		
(b)	(i)	3200	1	
	(ii)	any two from: easy to harvest; easy to spray/ cover; if one tree fails , not a big problem; more trees; quicker maturing; better chance of pollination; make more money; less damage from wind	1	two correct answers required for one mark
(c)		alcohol/ carbon dioxide ... any order; fermentation /anaerobic respiration	2	
(d)		The product has.... been grown by intensive farming. <input type="checkbox"/> been grown for a long time. <input type="checkbox"/> reached a certain standard. <input checked="" type="checkbox"/> reached a maximum size. <input type="checkbox"/>	1	if more than two ticks.. no marks

Question		Answer	Mark	Guidance
	(e) (i)	bacteria/ virus/ fungus	1	accept mould, yeast
	(ii)	eat foods; contaminate with their waste products /unwanted chemicals/ toxins/ cannot be eaten/ not edible/ food poisoning/ cause rotting/ decomposing/mouldy; breaking down food;	2	any two reject going off/ ruins/ destroys food
4	(a)	0.5; 1/2	1	
	(b)	crop yield does not vary/ regularly produce 3kg of seed; flowers/produces seeds at same time; harvest at same time	2	any two
	(c)	artificial insemination <input type="checkbox"/> food processing <input type="checkbox"/> selective breeding <input checked="" type="checkbox"/> surrogate parents <input type="checkbox"/>	1	if more than one tick ... no marks
	(d) (i)	A	1	
	(ii)	C/ allow B and C but not B on its own	1	
	(iii)	B and C	1	

Question		Answer	Mark	Guidance
	(e)	temperature/heat/warmth Heater and control such as automation; ventilation; fans/ windows and control such as automation eg sensor/ thermostat carbon dioxide; sensor plus burn fossil fuel; water/ moisture sprinkler/ watering and control such as automation, timing controlled; light; lighting/ shading and control such as automation	2	one mark for condition one mark for control (must match)
Total			36	

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