

# **Additional Applied Science A**

General Certificate of Secondary Education

Unit **A334/02**: Agriculture and Food

## **Mark Scheme for January 2011**

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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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Abbreviations, annotations and conventions used in the detailed mark scheme:

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

Question		Expected Answers	Marks	Additional Guidance								
1	(a)	<table border="1"> <tr> <td>fertilisation...</td> <td></td> </tr> <tr> <td>pollination...</td> <td>✓</td> </tr> <tr> <td>germination...</td> <td></td> </tr> <tr> <td>seed dispersal....</td> <td></td> </tr> </table>	fertilisation...		pollination...	✓	germination...		seed dispersal....		[1]	more than 1 tick = 0
fertilisation...												
pollination...	✓											
germination...												
seed dispersal....												
	(b)	(i)	shows 15/100X12; 1.8;	[2] correct answer is 2 marks <b>accept</b> 18 or 0.18 for 1 mark								
		(ii)	most ...apple; least...oilseed rape;	[1] both required for mark								
	(c)	(i)	sugar/ glucose on left of equation; alcohol + carbon dioxide on right of equation, in any order;	[2]								
		(ii)	to kill (unwanted) bacteria/ yeasts/ microorganisms/ microbes; to sterilise wort; to concentrate wort;/ evaporate water;	[1]								
		(iii)	so added yeast will not be killed; safe to add yeast/ so yeast can cause fermentation;	[1] <b>accept</b> best temperature for yeast								
		(iv)	D / inspecting froth;	[1]								
		(v)	fermentation/anaerobic respiration occurs/carbon dioxide produced; bottle could explode;	[2]								
<b>Total</b>			[11]									

Question		Expected Answers	Marks	Additional Guidance
2	(a)	(i)		
			[1]	reject cheaper/ saving money
		(ii)	[2]	
	(b)	(i)	[2]	reject sells products/ gives money. accept second answer even when first answer incorrect
		(ii)	[2]	reject avoids diseases

Question			Expected Answers	Marks	Additional Guidance
		(iii)	<b>any three from</b> selection of parents; use of teaser; sperm (from male); (1) stored frozen; (1) sperm put/ inserted; (1) use of hormones for female; (1) vagina/ near cervix (of female); (1)	[3]	
			<b>Total</b>	<b>[10]</b>	

Question			Expected Answers	Marks	Additional Guidance
3	(a)	(i)	hormone;	[1]	
		(ii)	<b>any two from</b> controls/ causes the release; (1) many eggs; (1) increases chance of fertilisation/success;(1)	[2]	<b>accept</b> getting cow on heat/ controls oestrous cycle
	(b)		uterus/womb;	[1]	
	(c)		<b>any two from</b> healthy; (1) mature; (1) previous mother; (1) no problems with previous births; (1) good/ high milk yield; (1) good strong legs to carry calf; (1)	[2]	
			<b>Total</b>	<b>[6]</b>	

Question		Expected Answers	Marks	Additional Guidance
4	(a)	any type of cells/ especially meristems; (1) sterile/ bleach added; (1) agar jelly/ gel containing nutrients/ growth hormones; (1)	[3]	<b>accept</b> other correct references eg callus growth, keeping agar at warm temperature <b>reject</b> reference to stem cells
	(b)	(i) <b>any two from</b> from same parent; (1) same genes/same DNA/same genetic code; (1) no exchange of genetic material; (1) since no sexual reproduction/ only asexual reproduction; (1)	[2]	
		(ii) cuttings/ layering/ budding/ grafting/ runners;	[1]	<b>accept</b> clones
	(c)	(i) <b>any two from</b> light; (1) carbon dioxide; (1) temperature; (1)	[2]	<b>accept</b> water
		(ii) a condition that limits the process even though other increasing conditions should increase its rate; owtte	[1]	full explanation required, <b>reject</b> limits the process
		<b>Total</b>	<b>[9]</b>	
		<b>Paper Total</b>	<b>[36]</b>	

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