

Additional Applied Science A

General Certificate of Secondary Education

Unit **A325/01**: Scientific Detection (Foundation Tier)

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

- If a candidate alters his/her response, examiners should accept the alteration.
- 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.

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

This would be worth 1 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"/>

This would be worth 0 marks.

Put ticks (✓) in the two correct boxes.

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

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

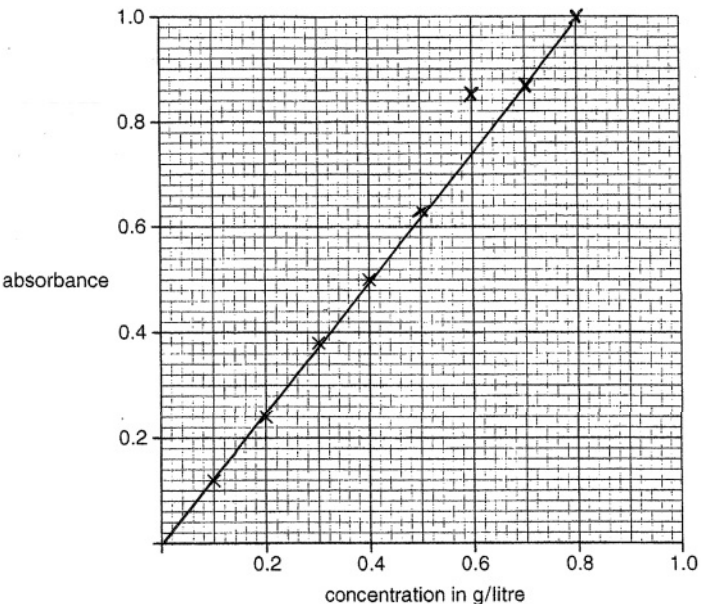
Edinburgh	
Manchester	
Paris	
Southampton	

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)	(i)	Food Standards Agency / FSA ; Office of Fair Trading / OFT Trading Standards	1	ignore consumer protection agency / environment agency / environmental health / Food Agency
1	(a)	(ii)	FSA - Make sure food is safe; OFT - Make sure price is reasonable / service is reasonable; TS – make sure public get a fair deal	1	ecf and answer must be related to ai and give specific detail e.g. collect data / proficiency testing for UKAS ignore to make sure standards are met.
1	(b)		greater magnification / shows more detail / 3D	1	accept greater resolution ignore more powerful / zoom in / clearer / information / defined / sharper
1	(c)	(i)	30 x 4; 120	2	120 scores 2 marks
1	(c)	(ii)	D ; any 2 from..... (same) shape / texture / pattern / structure / features / detail; sharp bits / jagged; holes	3	ignore same size / looks the same / any reference to colour mark each line independently
2	(a)		place dust and fluid on slide; add cover slip; use needle to lower cover slip	3	technique must work to score each mark ignore reference to air bubbles
2	(b)	(i)	0.002	1	reject if 2 figures given eg 1 or 0.002
2	(b)	(ii)	any 2 from skin scale / skin / scale; fibre; (dust mite) droppings	2	reject dust mites
2	(b)	(iii)	4	1	ignore list
2	(c)		stage (clips); lamp; lens(es) / (objective / eyepiece); knob	2	these four words must be present to score 4 correct = 2 marks 3 correct = 1 mark 2 correct = 0 marks BUT if two different parts listed then incorrect

Question			Answer	Mark	Guidance
3	(a)	(i)	to ensure the test is always carried out in the same way	1	accept correctly drawn lines or other indication accept alternative wording
3	(a)	(ii)	to check that the sample could not have been contaminated	1	accept correctly drawn lines or other indication accept alternative wording
3	(a)	(iii)	to make sure the clinistix is still in good condition	1	accept correctly drawn lines or other indication accept alternative wording
3	(a)	(iv)	to check for colour change indicating the presence of glucose in the urine	1	accept correctly drawn lines or other indication accept alternative wording
3	(b)	(i)	0.3	1	
3	(b)	(ii)	using Universal Indicator / pH paper / pH solution / soil test kit / uristix / Benedicts	1	ignore chromatograms / pH scale / pH probe / litmus
3	(c)		pregnancy testing / protein in urine / temperature colour strip	1	NB we are looking for a use of a test. reject same test as used in bii if bii correct e.g. uristix and protein in urine ignore diabetes
4	(a)		C	1	
4	(b)		D	1	
4	(c)		idea that they have moved different distances	1	accept correct answer re Rf values ignore they are different colours ignore took longer to rise up accept not in line / different place on scale reject solvent moves by different amounts
4	(d)		idea of comparison / match; to identify unknown	2	accept to check whether it contains that substance / to find out what it is
4	(e)		solvent; mobile; stationary; quantitative	2	4 correct = 2 marks 3 correct = 1 mark

Question	Answer	Mark	Guidance
5 (a)		2	<p>plotting mark 1 mark for all plots correct plots must be within half a square of correct position</p> <p>ignore 00 plot</p> <p>line of best fit 1 mark for line of best fit that goes through or within one square of the first and fourth given plots, and within 1 square of origin (must touch bottom left-hand square)</p> <p>reject multiple lines</p> <p>MUST BE STRAIGHT LINE</p>

Question		Answer	Mark	Guidance
5	(b)		1	accept any point that they have plotted that is furthest away from their line of best fit
5	(c)	0.24	1	ecf if answer is not 0.24 then error carried forward from the candidates line of best fit reject all answers if line of best fit is not drawn
5	(d)	intensity of a colour	1	If more than 1 box ticked then no mark accept any indication of correct result
Paper Total			36	

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