

Additional Applied Science A

General Certificate of Secondary Education

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

Mark Scheme for June 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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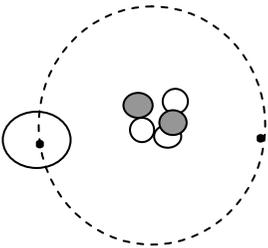
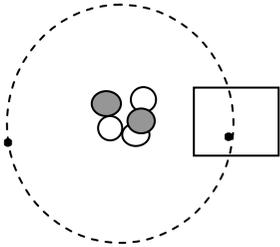
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1. Annotations

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

Question		Answer	Mark	Guidance																		
1	a	named equipment; calibration; how calibration is carried out / idea of comparison;	3	reject test tube or Bunsen burner accept measuring cylinder must be equipment that produces image or data. accept full explanation of calibration e.g use a mass checked against a known weight / traceability ignore repeating a test to see if the results are the same																		
	b	i	1	accept SOCO / forensic (scientist)																		
		ii	1	ignore Health & Safety do not accept 'standards' unqualified																		
2	a	<u>objective</u> (lens); focussing (adjuster); <u>stage</u> ;	3																			
	b	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>decreases</td> <td>increases</td> <td><input type="checkbox"/></td> </tr> <tr> <td>increases</td> <td>no change</td> <td><input type="checkbox"/></td> </tr> <tr> <td>decreases</td> <td>decreases</td> <td><input type="checkbox"/></td> </tr> <tr> <td>increases</td> <td>increases</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>no change</td> <td>increases</td> <td><input type="checkbox"/></td> </tr> <tr> <td>increases</td> <td>decreases</td> <td><input type="checkbox"/></td> </tr> </table>	decreases	increases	<input type="checkbox"/>	increases	no change	<input type="checkbox"/>	decreases	decreases	<input type="checkbox"/>	increases	increases	<input checked="" type="checkbox"/>	no change	increases	<input type="checkbox"/>	increases	decreases	<input type="checkbox"/>	1	no marks if more than 1 box ticked.
decreases	increases	<input type="checkbox"/>																				
increases	no change	<input type="checkbox"/>																				
decreases	decreases	<input type="checkbox"/>																				
increases	increases	<input checked="" type="checkbox"/>																				
no change	increases	<input type="checkbox"/>																				
increases	decreases	<input type="checkbox"/>																				
	c	i	1	A																		
		ii	1	B																		
	d		1	whorl																		
	e		2	50 alone scores 2 marks																		

2	f	i		1	accept ring either side reject ring electron AND neutron or proton reject ring around part of dotted line unless enclosing an electron
		ii		1	accept box either side accept box and ring on same side reject box electron AND neutron or proton reject box around part of dotted line unless enclosing an electron
		iii	uses or focuses with electrons;	1	reject detects electron / see electrons / uses electrons in the light
3	a	i	qualitative;	1	
		ii	quantitative indicates how much / amount / gives a number / quantity;	1	assume 'it' refers to quantitative accept idea of numbers accept reverse argument candidates do not have to refer to qualitative
		iii	blue;	1	accept bluey / bluish and light or dark blue reject if any other colour is given
	b		4 because colour matches / same colour;	1	both needed accept same shade of grey
	c		clinistix	1	any other named medical colour testing procedure e.g. diabetes or Chlamydia or cancer etc. accept colour changing thermometers ignore colorimetry and chromatography accept ideas such as testing urine for glucose BUT not just testing urine

4		<table border="1"> <tr> <td>A very thin slice is cut from the material.</td> <td>E</td> </tr> <tr> <td>The slice is dried and fixed.</td> <td>A</td> </tr> <tr> <td>The slice is placed in an electron microscope.</td> <td></td> </tr> <tr> <td>Air is sucked out of the electron microscope.</td> <td>D</td> </tr> <tr> <td>The image of the slice is viewed on a screen.</td> <td>B</td> </tr> </table>	A very thin slice is cut from the material.	E	The slice is dried and fixed.	A	The slice is placed in an electron microscope.		Air is sucked out of the electron microscope.	D	The image of the slice is viewed on a screen.	B	4	<p>ignore if candidates creates and fills in centre box</p>
A very thin slice is cut from the material.	E													
The slice is dried and fixed.	A													
The slice is placed in an electron microscope.														
Air is sucked out of the electron microscope.	D													
The image of the slice is viewed on a screen.	B													
5	a		4	<p>1 mark for each correct horizontal row of boxes</p> <p>reading the lines from left to right</p> <p>if two lines start from the same box then both lines are incorrect.</p> <p>if two lines end in the same box then give mark if one of the sequences is correct.</p> <p>if candidate numbers the boxes then.....</p> <p>1.....6.....9 2.....8.....10 3.....7.....11 4.....5.....12</p>										
	b	<p>graphs / bar chart / histogram / chart / pie chart; drawings / video / photo / picture / image / diagram; table / grid / spreadsheet; power point / word / printed (doc) / written (report); audio / sound recording;</p>	2	<p>reject database</p> <p>ignore computer, file, report or document as insufficient</p>										
6	a	3;	1											
	b	40;	1	<p>accept 4cm and + or – 1 mm</p>										
	c	40 / 10000; 0.004;	2	<p>accept 1/250mm or 1/2500cm 4×10^{-3} 0.004 scores 2 marks. If answer correct ignore calculation. ecf</p>										
		Total	36											

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