

Chemistry A

General Certificate of Secondary Education

Unit **A321/01**: Modules C1, C2, C3 (Foundation Tier)

Mark Scheme for June 2011

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Question			Answer	Mark	Guidance																		
1	a	i	$(115+102+112+106+118) / 5$ (1) = 111 (1)	2	give full marks for correct answer without working allow 110.6 not 110																		
		ii	102 to 118 (1)	1	allow 118 to 102																		
		iii	<div style="text-align: right;"> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> </div> <p>... is smaller than the range at B</p>	1																			
		iv	<p>any two from: outliers can be identified; a mean/average can be calculated; if only one measurement is taken it may be incorrect/inaccurate/faulty; makes data more reliable;</p>	2	<p>ignore ideas of 'fair testing' not 'best estimate' unless qualified as mean/average ignore more evidence/comparisons unless qualified</p>																		
	b		<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>data</th> <th>opinion</th> </tr> </thead> <tbody> <tr> <td>Andrew</td> <td></td> <td>✓</td> </tr> <tr> <td>Amy</td> <td>✓</td> <td></td> </tr> <tr> <td>Jeff</td> <td>✓</td> <td></td> </tr> <tr> <td>Edwin</td> <td></td> <td>✓</td> </tr> <tr> <td>Clarissa</td> <td></td> <td>✓</td> </tr> </tbody> </table>		data	opinion	Andrew		✓	Amy	✓		Jeff	✓		Edwin		✓	Clarissa		✓	3	all five correct for 3 marks four correct for 2 marks two or three correct for one mark
	data	opinion																					
Andrew		✓																					
Amy	✓																						
Jeff	✓																						
Edwin		✓																					
Clarissa		✓																					
Total				[9]																			

Question		Answer	Mark	Guidance
2	a	<p>any three from: people will share cars / cars will have more than one person in them; people will use public transport/use cycles/walk; fewer cars (in the town/on the road); less fuel is burned; less exhaust gas/nitrogen dioxide produced;</p>	3	<p>ignore use other means of transport unless qualified eg cycles allow petrol/diesel/LPG for fuel ignore less pollution/emissions/fumes unless qualified ignore reference to other pollutants eg carbon dioxide</p>
	b	<p style="text-align: right;"><input type="checkbox"/></p> <p>nitrogen dioxide reacts with oxygen ... <input checked="" type="checkbox"/> (1)</p> <p style="text-align: right;"><input type="checkbox"/></p> <p style="text-align: right;"><input type="checkbox"/></p> <p>nitric acid fall to the ground in acid rain <input checked="" type="checkbox"/> (1)</p> <p style="text-align: right;"><input type="checkbox"/></p>	2	
Total			[5]	

Question		Answer	Mark	Guidance
3	a	2 making the product from the material (1) 3 using the product (1)	2	answers must be in correct order allow shirt for product for both allow wearing the shirt ignore any reference to selling/buying for either marking point
	b	Crude oil is not used ... manufacture ... <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> Less energy is used in the lifetime ... <input checked="" type="checkbox"/> (1) <input type="checkbox"/>	2	
	c	any three from: forces between chains (that are not cross linked) are weak; cross linking forms bonds between chains; cross linked bonds/forces between chains are strong(er); more force/energy needed to separate chains;	3	do not credit answers that refer to forces in chains or chains being stronger ignore idea of chains/molecules being closer together allow use of polymer molecules instead of chains in all answers do not accept polymer or fibre in place of molecule or chain ignore references to sliding or overlapping ignore harder to break apart
Total			[7]	

Question		Answer	Mark	Guidance
4	a	hemp (1)	1	
	b	<input type="checkbox"/> Poly(propene) rope is expensive ... <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> Natural materials are available locally. <input checked="" type="checkbox"/> (1) <input type="checkbox"/>	2	
	c	any two from: stronger; lower chance/ease of rotting; water absorption is lower;	2	allow reverse answer for sisal allow use of data from table eg breaking load for nylon is 4650kg compared to 1225kg for sisal
	d	i		
		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> add plasticizer to the polymer <input checked="" type="checkbox"/> (1)	1	
		ii	4 (1)	1 allow 1685
Total			[7]	

Question		Answer	Mark	Guidance	
5	a	<input type="checkbox"/> add manure to soil <input checked="" type="checkbox"/> (1) <input type="checkbox"/> pick pests off by hand <input checked="" type="checkbox"/> (1) add pest predators to crops <input checked="" type="checkbox"/> (1)	3		
	b	i	<input type="checkbox"/> <input type="checkbox"/> Joe will be able to charge more ... <input checked="" type="checkbox"/> (1) <input type="checkbox"/>	1	
		ii	Joe will get a lower yield for ... <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1	
	c	does not use synthetic fertiliser/pesticides/herbicides (1) these are made from crude oil which will run out / these cause pollution (1)	2	allow uses manure (1) which is renewable (1) ignore 'chemicals'	
Total			[7]		

Question		Answer	Mark	Guidance																								
6	a	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2"></th> <th colspan="4">elements present</th> </tr> <tr> <th>carbon</th> <th>hydrogen</th> <th>nitrogen</th> <th>oxygen</th> </tr> </thead> <tbody> <tr> <td>hydro-carbon</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td></td> <td></td> </tr> <tr> <td>sugar</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td></td> <td style="text-align: center;">✓</td> </tr> <tr> <td>protein</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> </tr> </tbody> </table>		elements present				carbon	hydrogen	nitrogen	oxygen	hydro-carbon	✓	✓			sugar	✓	✓		✓	protein	✓	✓	✓	✓	3	one mark for each correct row
	elements present																											
	carbon	hydrogen	nitrogen	oxygen																								
hydro-carbon	✓	✓																										
sugar	✓	✓		✓																								
protein	✓	✓	✓	✓																								
	b	<div style="text-align: right; margin-right: 20px;"> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> </div> <p>The sugar is quickly absorbed</p> <p>There is a rapid rise in blood sugar</p>	2																									

Question		Answer	Mark	Guidance
6	c	<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> <p>It keeps the food safer for longer.</p> <p>It prevents the growth of ...</p> </div> <div style="width: 35%;"> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input checked="" type="checkbox"/> (1)</p> <p><input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> </div> </div>	2	
		Total	[7]	

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