

Science A

General Certificate of Secondary Education

Unit **A213/01**: Modules B3, C3, P3 (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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Question			Answer	Mark	Guidance			
1	a		C D B one mark for D in the middle one mark for C <u>and</u> B in correct place	2	2 marks for three correct			
		b	i			Alan <u>and</u> Dave (1)	1	both needed
			ii			Alan (1)	1	
Total				[4]				
2	a	i	bar to correct place (42% \pm 1%) (1)	1				
		ii	nuclear industry (1)	1				
	b	i	15 % (1)	1				
		ii	food and drink (1)	1				
	c		named occupation (1) detail of risk (1) action by employer (1)	3	free response e.g. nuclear power station/reprocessing plant, nuclear medicine ignore lab on its own ignore X rays cancer/cell damage/ionising accept 'exceeding allowed dose' / owtte regular monitoring/use of shielding/protective or safety clothing/restrict time/maximise distance/safe storage			
			Total			[7]		
3			A (1) C (1) A (1)	3				
		Total				[3]		

Question		Answer	Mark	Guidance
4	a	6 (1)	1	
	b	5 (1)	1	
Total			[2]	

5	a	arrow from sand eels to puffin (1)	1	
	b	i herring (1)	1	
		ii herring (1)	1	
	c	<div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 20px;">competition</div> <div style="display: flex; flex-direction: column; gap: 10px;"> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> </div> </div>	1	
Total			[4]	

6	a	<div style="display: flex; justify-content: space-around; align-items: center;"> chimpanzee A. ramidus humans </div>	2	all three correct = 2 marks 1 or 2 correct = 1 mark
	b	pelvis was badly crushed (1) only partial skeleton (1)	2	
Total			[4]	

Question		Answer	Mark	Guidance
7	a	<p>any three from:</p> <p>variation not all the males have the same size tails / same number eyespots;</p> <p>competition males compete for mates / females prefer males with bigger tails/more eyespots;</p> <p>reproduction (selected) males are more likely to reproduce;</p> <p>evolutionary consequence passing on genes for bigger tails (so tail size increases over time);</p>	3	<p>allow reverse arguments</p> <p>'females prefer to mate with males with most eyespots' is a quote but gets points 1 & 2</p> <p>N.B. 'males with bigger tails/more eyespots are more likely to reproduce' = 2 marks (marking points 1 & 3)</p>
	b	fossils and DNA in that order (1)	1	
Total			[4]	

Question			Answer	Mark	Guidance
8	a	i	prevent harmful microbes/bacteria/fungi/mould growing on food (1) makes food safe to eat / stop it going off / extend shelf life (1)	2	accept make it last longer
		ii	<div style="text-align: center;"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> </div> Read ... to check for sulfur dioxide (1)	1	tick in any other box = 0 marks
	b	i	(uncooked) cassava / gluten (in wheat) / peanut (allergy) / (poisonous) mushrooms / kidney beans (1)	1	any reasonable answer for poisons in any plant or animal source accept alcohol, puffer fish
		ii	what is done (1) what is added (1)	2	one from either category = 1 mark max 2 e.g. farming: pesticides/fertilisers processing: preservatives / chemicals formed in storage, processing or cooking packaging: chemicals from plastic for 2 marks, must be linked
Total				[6]	

Question		Answer	Mark	Guidance										
9	a	<p>... safe levels of chemicals in food. <input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p>They advise people on what they ... eat <input checked="" type="checkbox"/> (1)</p> <p><input type="checkbox"/></p>	2	1 mark for each correct answer if 3 ticks deduct 1 mark 4 or 5 ticks = 0 marks										
	b	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>true</th> <th>false</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">✓</td> </tr> <tr> <td></td> <td style="text-align: center;">✓</td> </tr> </tbody> </table>	true	false	✓			✓		✓	2	all 3 ticks in correct boxes = 2 marks 2 or 1 tick correct = 1 mark		
true	false													
✓														
	✓													
	✓													
	c	i	carbon; hydrogen; oxygen; nitrogen;	2	answers in any order accept chemical symbols C, H, O, N all 4 correct = 2 marks 3/2 correct = 1 mark									
		ii	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 5px; width: 30%;">Digestion breaks ...</td> <td style="width: 10%;"></td> <td style="border: 1px solid black; padding: 5px; width: 30%;">... kidneys</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">Amino acids ...</td> <td></td> <td style="border: 1px solid black; padding: 5px;">... blood</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">Urea is excreted ...</td> <td></td> <td style="border: 1px solid black; padding: 5px;">... liver</td> </tr> </table>	Digestion breaks kidneys	Amino acids blood	Urea is excreted liver	2	all 3 lines correct = 2 marks 2 or 1 line correct = 1 mark
Digestion breaks kidneys												
Amino acids blood												
Urea is excreted liver												
Total			[8]											

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