



GCSE

Biology A

General Certificate of Secondary Education **A222/01**

Unit 2: Modules B4, B5, B6 (Foundation Tier)

Mark Scheme for June 2010

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Question		Expected Answers	Marks	Additional Guidance
1	a	proteins (1) speed up (chemical) reactions / OWTTE (1)	[2]	eg make reactions faster accept are catalysts as an alternative to speed up reactions
	b	lock and key model (1)	[1]	more than one response = 0 marks accept any clear indication eg underlining
	c i	temperature <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1)	[1]	more than one response = 0 marks accept any clear indication of the correct answer only
	ii	increase / OWTTE (1)	[1]	eg be faster/speed up/ be higher not higher on its own
		Total	[5]	

2	a	<table border="1"> <tr> <td>chemical</td><td>completely</td><td>partly</td><td>not</td></tr> <tr> <td>water</td><td></td><td>✓</td><td></td></tr> <tr> <td>sugar</td><td>✓</td><td></td><td></td></tr> <tr> <td>urea</td><td></td><td>✓</td><td>✓</td></tr> </table> (1) (1) (1)	chemical	completely	partly	not	water		✓		sugar	✓			urea		✓	✓	[3]	look at the responses to each of the three rows each correct row = 1 mark allow urea tick in middle or right-hand column but not in both more than one response in any row = 0 marks for that row accept any clear indication of the correct answer only
chemical	completely	partly	not																	
water		✓																		
sugar	✓																			
urea		✓	✓																	
	b	volume (of urine produced) increases / OWTTE (1) concentration (of urine produced) is more dilute (1) the water levels in the blood/body fall (1)	[3]	eg more urine produced not urinate more accept concentration is weaker ignore references to colour changes in urine accept body is dehydrated/becomes dehydrated																
		Total	[6]																	

Question			Expected Answers	Marks	Additional Guidance
3	a	i	the maintenance of a constant internal environment / OWTTE (1)	[1]	accept 'inside body' = internal environment ignore references to internal temperature
		ii	energy gain is the same as energy loss / OWTTE (1)	[1]	accept 'input' = gain, 'output' = loss accept 'they are the same'/balanced accept 'it' = energy gain
	b		receptors (1) skin (1) brain (1)	[3]	if more than three responses, deduct 1 mark for each additional response candidate cannot score less than zero marks accept clear indication of correct response eg use of arrows
	c		respiration (1)	[1]	accept a clear indication of correct response eg underlined, other options deleted more than one response ticked = 0 marks
			Total	[6]	

4	a		increases (1) DNA (1)	[2]	responses must be in the correct order accept an arrow from correct word to correct space
	b		23 (1)	[1]	more than one response = 0 marks accept any clear indication of the correct answer only eg underlining, tick etc
			Total	[3]	

Question		Expected Answers	Marks	Additional Guidance
5	a	<input type="checkbox"/> <input type="checkbox"/> Only some remain active. <input checked="" type="checkbox"/> (1) <input type="checkbox"/>	[1]	more than one response = 0 marks accept any clear indication of the correct response only
	b	hormones (1)	[1]	more than one response = 0 marks accept any clear indication of the correct response only
	c	... have specialised cells. <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> ... make specific proteins ... <input checked="" type="checkbox"/>	[1]	both answers need to be correct to gain 1 mark more than 2 responses = 0 marks accept any clear indication of the correct response only
Total			[3]	

Question		Expected Answers			Marks	Additional Guidance																								
6	a	<table border="1"> <thead> <tr> <th>description</th> <th>label</th> </tr> </thead> <tbody> <tr> <td>where the genetic code is found</td> <td>A</td> </tr> <tr> <td>where proteins are made</td> <td>B</td> </tr> </tbody> </table>			description	label	where the genetic code is found	A	where proteins are made	B	[1]	<p>more than one response in each box = 0 marks</p> <p>accept any clear indication of correct responses eg use of linking arrows with diagram, correct description alongside label on diagram (A = genetic code, B = proteins) or nucleus = A, cytoplasm = B within the box</p>																		
description	label																													
where the genetic code is found	A																													
where proteins are made	B																													
	b	<table border="1"> <thead> <tr> <th>DNA ...</th> <th colspan="4"></th> </tr> </thead> <tbody> <tr> <td>... strands</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>... bases</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>... bases ...</td> <td>single</td> <td>pairs</td> <td>triplets</td> <td>fours</td> </tr> <tr> <td>shape ...</td> <td>circular</td> <td>cubic</td> <td>helix</td> <td>zig-zag</td> </tr> </tbody> </table>		DNA strands	1	2	3	4	... bases	2	3	4	5	... bases ...	single	pairs	triplets	fours	shape ...	circular	cubic	helix	zig-zag	[3]	<p>four rows correct = 3 marks three rows correct = 2 marks one or two rows correct = 1 mark</p> <p>more than one response in a row, deduct 1 mark</p> <p>accept any clear indication of correct response eg tick, other options crossed out, clearly underlined, shaded</p>
DNA ...																														
... strands	1	2	3	4																										
... bases	2	3	4	5																										
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shape ...	circular	cubic	helix	zig-zag																										
		<p style="text-align: center;">Total</p>			[4]																									

Question		Expected Answers	Marks	Additional Guidance
7	a	brain (1)	[1]	more than one response = 0 marks accept any clear indication of the correct response only
	b	... storage and retrieval .. <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/>	[1]	more than one response = 0 marks accept any clear indication of the correct response only
	c	short-term and long-term ... <input type="checkbox"/> <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/>	[1]	more than one response = 0 marks accept any clear indication of the correct response only
	d	brain new	[1]	two correct responses = 1 mark responses must be in the correct order accept arrow from correct word to correct space
		Total	[4]	

Question		Expected Answers	Marks	Additional Guidance
8	a	protect itself (1)	[1]	accept stop itself being eaten/becoming prey / stop things trying to eat it / to avoid predators or predation ignore camouflage / hiding ignore references to damage unless referring to being eaten
	b	any two from: grasping; sucking; startle reflex eg jumping when they hear a noise; plantar (foot curling); rooting reflex eg turning its head in response to cheek being stroked; pupil reflex;	[2]	not blinking not crying not pupils dilating unless qualified not reacts to sound
	c	brain (1) spinal cord (1)	[2]	if more than 2 responses deduct 1 mark for each additional response accept any clear indication of the two correct responses
Total			[5]	

Question		Expected Answers	Marks	Additional Guidance
9	a	light sensory	[1]	both responses in the correct order needed for the mark accept clear indication of correct response eg use of arrows
	b	moving away from fire is voluntary (1) jumping (in response to the spark) is involuntary (1)	[2]	accept for 1 mark a general statement explaining what is meant by voluntary and involuntary reflexes eg voluntary is something you choose to do whilst involuntary is something you cannot control/automatic examples used in response must be from the stem of the question
	c	i	[1]	more than one response = 0 marks accept any clear indication of correct response eg other options crossed out, clearly underlined, shaded, circled accept cross – only without ticks more than one response = 0 marks
		ii	[2]	insulates the neuron (from surrounding cells) / OWTTE (1) increases the speed of the transmission of a nerve impulse (1) ignore stops interference from surrounding cells accept a clear reference to saltatory response / jumping of impulse = increased speed of transmission accept sends information more quickly.
			Total [6]	

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