

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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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		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	[1]	more than one response = 0 marks accept any clear indication of the correct answer only
		<div style="text-align: center;"> <input type="checkbox"/> <input type="checkbox"/> temperature <input checked="" type="checkbox"/> (1) </div>		
		ii	[1]	eg be faster/speed up/ <u>be</u> higher not higher on its own
		Total	[5]	

2	a	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>chemical</th> <th>completely</th> <th>partly</th> <th>not</th> </tr> </thead> <tbody> <tr> <td>water</td> <td></td> <td style="text-align: center;">✓</td> <td></td> </tr> <tr> <td>sugar</td> <td style="text-align: center;">✓</td> <td></td> <td></td> </tr> <tr> <td>urea</td> <td></td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> </tr> </tbody> </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	<p style="text-align: right;"> <input type="checkbox"/> <input type="checkbox"/> Only some remain active. <input checked="" type="checkbox"/> (1) <input type="checkbox"/> </p>	[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	<p>... have specialised cells. <input checked="" type="checkbox"/></p> <p style="text-align: right;"> <input type="checkbox"/> <input type="checkbox"/> ... make specific proteins ... <input checked="" type="checkbox"/> </p>	[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	description		label		[1]	more than one response in each box = 0 marks 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
		where the genetic code is found		A			
		where proteins are made		B			
	b	DNA ...				[3]	four rows correct = 3 marks three rows correct = 2 marks one or two rows correct = 1 mark more than one response in a row, deduct 1 mark accept any clear indication of correct response eg tick, other options crossed out, clearly underlined, shaded
... strands		1	2	3	4		
... bases		2	3	4	5		
... bases ...		single	pairs	triplets	fours		
shape ...		circular	cubic	helix	zig-zag		
		Total				[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	<p style="text-align: right;"> <input type="checkbox"/> <input type="checkbox"/> ... storage and retrieval .. <input checked="" type="checkbox"/> (1) <input type="checkbox"/> </p>	[1]	more than one response = 0 marks accept any clear indication of the correct response only
	c	<p style="text-align: right;"> <input type="checkbox"/> short-term and long-term ... <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> </p>	[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 <div style="text-align: center;"> <input type="checkbox"/> membrane <input checked="" type="checkbox"/> (1) <input type="checkbox"/> <input type="checkbox"/> </div>	[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 insulates the neuron (from surrounding cells) / OWTTE (1) increases the speed of the transmission of a nerve impulse (1)	[2]	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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