



# 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 <b>accept</b> are catalysts as an alternative to speed up reactions
	b	lock and key model (1)	[1]	more than one response = 0 marks <b>accept</b> any clear indication eg underlining
	c	i <div style="text-align: right;"><input type="checkbox"/> <input type="checkbox"/> temperature <input checked="" type="checkbox"/> (1)</div>	[1]	more than one response = 0 marks <b>accept</b> any clear indication of the correct answer only
		ii increase / OWTTE (1)	[1]	eg be faster/speed up/ <u>be</u> higher <b>not</b> higher on its own
		<b>Total</b>	<b>[5]</b>	

2	a	<table><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> <div>(1) (1) (1)</div>	chemical	completely	partly	not	water		✓		sugar	✓			urea		✓	✓	[3]	look at the responses to each of the three rows each correct row = 1 mark  <b>allow</b> urea tick in middle <b>or</b> right-hand column but not in both more than one response in any row = 0 marks for that row  <b>accept</b> 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 <b>not</b> urinate more <b>accept</b> concentration is weaker <b>ignore</b> references to colour changes in urine <b>accept</b> body is dehydrated/becomes dehydrated																
		<b>Total</b>	[6]																	

Question			Expected Answers	Marks	Additional Guidance
3	a	i	the maintenance of a constant internal environment / OWTTE (1)	[1]	<b>accept</b> 'inside body' = internal environment <b>ignore</b> references to internal temperature
		ii	energy gain is the same as energy loss / OWTTE (1)	[1]	<b>accept</b> 'input' = gain, 'output' = loss <b>accept</b> 'they are the same'/balanced <b>accept</b> '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 <b>accept</b> clear indication of correct response eg use of arrows
	c		respiration (1)	[1]	<b>accept</b> a clear indication of correct response eg underlined, other options deleted more than one response ticked = 0 marks
			<b>Total</b>	[6]	

  

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

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

Question			Expected Answers					Marks	Additional Guidance																														
6	a		<table><tr><td>description</td><td>label</td></tr><tr><td>where the genetic code is found</td><td>A</td></tr><tr><td>where proteins are made</td><td>B</td></tr></table>					description	label	where the genetic code is found	A	where proteins are made	B	[1]	more than one response in each box = 0 marks <b>accept</b> 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																								
								description	label																														
								where the genetic code is found	A																														
								where proteins are made	B																														
	b		<table><tr><td>DNA ...</td><td></td><td></td><td></td><td></td></tr><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><tr><td colspan="5">Total</td></tr></table>					DNA ...					... strands	1	2	3	4	... bases	2	3	4	5	... bases ...	single	pairs	triplets	fours	shape ...	circular	cubic	helix	zig-zag	Total					[3]	four <b>rows</b> correct = 3 marks three <b>rows</b> correct = 2 marks one or two <b>rows</b> correct = 1 mark  more than one response in a row, deduct 1 mark  <b>accept</b> any clear indication of correct response eg tick, other options crossed out, clearly underlined, shaded
DNA ...																																							
... strands								1	2	3	4																												
... bases								2	3	4	5																												
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Total																																							
			Total					[4]																															

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

Question		Expected Answers	Marks	Additional Guidance
8	a	protect itself (1)	[1]	<b>accept</b> stop itself being eaten/becoming prey / stop things trying to eat it / to avoid predators or predation <b>ignore</b> camouflage / hiding <b>ignore</b> references to damage unless referring to being eaten
	b	<b>any two from:</b> 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]	<b>not</b> blinking <b>not</b> crying <b>not</b> pupils dilating unless qualified <b>not</b> reacts to sound
	c	brain (1) spinal cord (1)	[2]	if more than 2 responses deduct 1 mark for each additional response <b>accept</b> any clear indication of the two correct responses
		<b>Total</b>	[5]	



Question			Expected Answers	Marks	Additional Guidance
9	a		light sensory	[1]	both responses in the correct order needed for the mark <b>accept</b> 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]	<b>accept</b> 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  <b>accept</b> any clear indication of correct response eg other options crossed out, clearly underlined, shaded, circled <b>accept</b> cross – only without ticks more than one response = 0 marks
		ii	<b>insulates</b> the neuron (from surrounding cells) / OWTTE (1) <b>increases</b> the speed of the transmission of a nerve impulse (1)	[2]	<b>ignore</b> stops interference from surrounding cells  <b>accept</b> a clear reference to saltatory response / jumping of impulse = increased speed of transmission <b>accept</b> sends information more quickly.
			<b>Total</b>	[6]	

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