

Coordination and Response

Mark Scheme 4

Level	IGCSE(9-1)
Subject	Biology
Exam Board	Edexcel IGCSE
Module	Single Award (Paper 2B)
Topic	Structure and Functions in Living Organisms
Sub-Topic	Coordination and Response
Booklet	Mark Scheme 4

Time Allowed: 60 minutes

Score: /50

Percentage: /100

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>90%	80%	70%	60%	50%	40%	30%	20%	10%

Question number	Answer	Notes	Marks
1 (a) (i)	helps combustion / helps burning / eq;		1
(ii)	1. increase surface area / more surface / longer distance / longer time / eq; 2. (better) heat transfer (to water) / heat more of the water / heat water better / eq;		2
(iii)	distribute heat / spread heat / spread temperature / even out temperature / make all the water the same temperature / eq;		1
(b) (i)	7.5;		1
(ii)	6300;	if not 6300 use number from (i) to calculate correct answer in (ii) eg 7140 is acceptable if 8.5 in (i)	1
			Total 6 marks

Question number	Answer	Notes	Marks
2 (a) (i)	pigeons/birds in middle; arrows correct;	ignore sun	2
(b) (i)	fewer pigeons more hawk success / eq;	allow converse	2
	less chance to see or spot hawk / less chance to warn / eq;	ignore ref to distance	
(ii)	<u>ciliary</u> muscle / <u>ciliary</u> body; contracts / eq; ignore constrict <u>suspensory</u> ligaments; slacken / relax / eq; lens; fat(ter) / thick(er) / wider / rounder / eq;	assume near but allow converse if ref to hawk far away only accept words linked to width ignore pupil / iris / radial circular muscles eg do not award contract mark if ref to radial / circular	max 4
(iii)	digested / broken down / large to small molecules;	allow ref to digestion break down anywhere	max 3
	protease / pepsin / enzyme; amino acids / peptides; HCl / acid / low pH;	only allow the term enzyme if in stomach reject trypsin	

TOTAL 11 MARKS

Question number	Answer	Notes	Marks
3 (a)	6 to 7;	Allow 0.6 to 0.7 <u>cm</u>	1
(b)	retina / fovea / yellow spot / macula;		1
(c)	1. <u>radial</u> muscles contract; 2. <u>circular</u> muscles relax; 3. pupil gets bigger / wider / dilates / expands / eq; 4. more light enters eye;	Ignore references to iris size Reject ciliary muscles	Max 3

Total 5

Question number	Answer	Notes	Marks								
4(a)	1. amylase; 2. digests starch / breaks down starch; 3. maltose; 4. lubricates / moisten / soften food / eq;	Mp 3 allow glucose Mp 4 ignore makes it easier to swallow	2 max								
(b)	<table border="1" data-bbox="461 751 1444 1114"> <thead> <tr> <th data-bbox="461 751 954 818">Sense organ</th> <th data-bbox="956 751 1444 818">Stimulus</th> </tr> </thead> <tbody> <tr> <td data-bbox="461 820 954 930">eye</td> <td data-bbox="956 820 1444 930">sight (of food / sight of lab attendant / eq);</td> </tr> <tr> <td data-bbox="461 932 954 1042">ear</td> <td data-bbox="956 932 1444 1042">sound (of food arriving / sound of lab attendant / tuning fork / eq);</td> </tr> <tr> <td data-bbox="461 1043 954 1114">nose</td> <td data-bbox="956 1043 1444 1114">smell (of food / eq);</td> </tr> </tbody> </table>	Sense organ	Stimulus	eye	sight (of food / sight of lab attendant / eq);	ear	sound (of food arriving / sound of lab attendant / tuning fork / eq);	nose	smell (of food / eq);		2 max
Sense organ	Stimulus										
eye	sight (of food / sight of lab attendant / eq);										
ear	sound (of food arriving / sound of lab attendant / tuning fork / eq);										
nose	smell (of food / eq);										

(c)	<p>1. fast(er) / quick / rapid / immediate / eq;</p> <p>2. involuntary / unconscious / without thinking / automatic / does not involve brain/ eq;</p> <p>3. instinctive / inherited / inborn / innate / not learnt;</p> <p>4. protects the body from damage / eq;</p>		2 max
(d) (i)	<p>closer to B / similar to B / closer to original stimulus / eq;</p>	Ignore cannot hear E and F	1
(d) (ii)	<p>1. measure <u>volume</u> / <u>mass</u> / <u>weight</u> of saliva;</p> <p>2. measuring cylinder / suitable scaled container / scales / syringe / eq;</p>	<p>Ignore reference to time</p> <p>Allow idea of cotton wool being weighed by scales</p>	2 max
(e)	<p>1. different behaviours / different responses / respond to different stimuli / eq;</p> <p>2. different nervous systems / brains / eq;</p>	<p>Mp 1 Allow different hearing ability / different sensitivity</p> <p>Mp 2 Ignore different intelligence</p>	2 max

(f)	1. receptors; 2. impulse / signal; 3. sensory neurone; 4. to spinal cord / grey matter / CNS; 5. synapse; 6. relay neurone / intermediate neurone / interneurone ; 7. motor neurone; 8. muscle / effector;	Mp 2 ignore message	5 max
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Total 16 marks

Question number	Answer	Notes	Marks
5 (a)	A lens; B cornea; C retina;	A. Ilow lense C. ignore rods/cones/receptors/fovea	3
(b) (i)	same/similar cells / cells with the same function / all muscle <u>cells</u> / eq;	ignore group of cells alone allow group of cells working together	1
(ii)	1. radial muscles contract / circular muscles relax; 2. <u>pupil</u> dilates / widens / gets bigger / <u>iris</u> gets smaller / eq; 3. more light can enter;		3

(Total for Question = 7 marks)

Question number	Answer	Notes	Marks
6 (a)	1. (ears) large surface area / increases SA:VOL; 2. heat loss / cools / eq; 3. have a blood supply / capillaries; 4. <u>vasodilation</u> ; not if linked to capillaries/veins 5. flapping / fanning / eq;	ignore shade / thin 2. allow sweating / evaporation	3
(b)	1. enzymes/active site denatured / destroyed; 2. affects reactions / affects metabolism / affects digestion / affects respiration /eq;	ignore dehydration	2

(Total for Question = 5 marks)