



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY

0610/32

Paper 3 Theory (Core)

March 2017

MARK SCHEME

Maximum Mark: 80

Published

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This document consists of **10** printed pages.

Abbreviations used in the Mark Scheme:

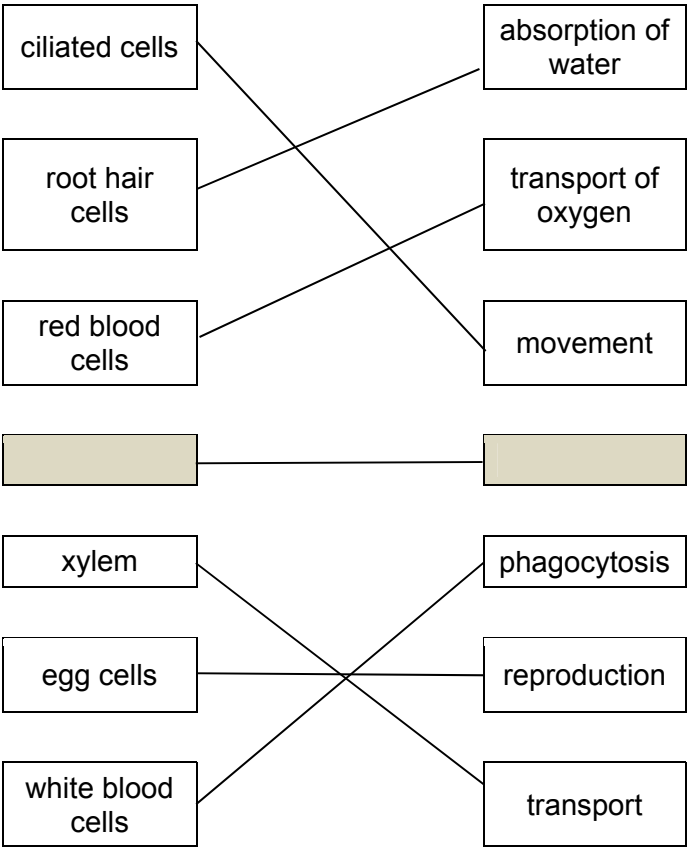
;	separates marking points
/	alternatives
I	ignore
R	reject
A	accept (for answers correctly cued by the question, or guidance for examiners)
AW	alternative wording
AVP	any valid point
ecf	credit a correct statement/calculation that follows a previous wrong response
ora	or reverse argument
()	the word/phrase in brackets is not required, but sets the context
<u>underline</u>	actual words given must be used by the candidate (or grammatical variants of them)

Question	Answer	Marks	Guidance
1	<pre> graph LR A[salivary glands] --- B[amylase] C[pancreas] --- D[lipase] C --- E[protease] F[glands in stomach lining] --- E </pre>	4	one mark for each correct line deduct one mark for each extra line drawn
	Total:	4	

Question	Answer	Marks	Guidance
2(a)(i)	A = <u>aorta</u> ; B = <u>pulmonary vein</u> ; C = <u>atrium</u> ; D = <u>ventricle</u> ; E = <u>muscular wall</u> ;	5	
2(a)(ii)	<u>right ventricle</u> ;	1	
2(b)(i)	5 <u>and</u> 32 ; dm ³ per min ;	2	
2(b)(ii)	380 ;;	2	(19 ÷ 5) · 100 = 1 mark
2(b)(iii)	heart beats faster ; heart pumps more blood out per beat/ beats with more force per beat ;	2	

Question	Answer	Marks	Guidance
2(b)(iv)	F is fitter / AW / has a stronger heart / is exercising more vigorously / has a larger body / larger heart / is male ;	1	ora for G
	Total:	13	

Question	Answer	Marks	Guidance
3(a)(i)	H sensory neurone ; J motor neurone ; K relay neurone ;	3	
3(a)(ii)	circle around one of the synapses (on Fig. 3.1) ;	1	I if circle is too large to be specific
3(a)(iii)	rapid / instant / AW ; automatic / involuntary / AW ; co-ordinated ;	2	
3(b)(i)	rapid so that further damage is avoided quickly ; bar dropped before student is aware of pain / danger ; co-ordinated / appropriate muscles involved ; AVP ;	2	A protective
3(b)(ii)	pupil reflex / knee reflex / any valid example described ;	1	
	Total:	9	

Question	Answer	Marks	Guidance
4		5	1 line correct = 1 mark 2 lines correct = 2 marks 3 lines correct = 3 marks 4 or 5 lines correct = 4 marks 6 lines correct = 5 marks
	Total:	5	

Question	Answer	Marks	Guidance																								
5(a)	group of organisms that reproduce ; offspring are fertile ;	2																									
5(b)	<table border="1"> <tr> <td>amphibians</td><td>reptile</td><td>bird</td><td>mammal</td></tr> <tr> <td></td><td></td><td>✓</td><td></td></tr> <tr> <td></td><td>✓</td><td></td><td></td></tr> <tr> <td>✓</td><td>✓</td><td>✓</td><td></td></tr> <tr> <td></td><td></td><td>✓</td><td>✓</td></tr> <tr> <td></td><td></td><td></td><td>✓</td></tr> </table>	amphibians	reptile	bird	mammal			✓			✓			✓	✓	✓				✓	✓				✓	5	one mark for each correct row
amphibians	reptile	bird	mammal																								
		✓																									
	✓																										
✓	✓	✓																									
		✓	✓																								
			✓																								
	Total:	7																									

Question	Answer	Marks	Guidance
6(a)(i)	carbon dioxide + water ; → glucose + oxygen ;	2	
6(a)(ii)	<u>chloroplasts</u> ;	1	
6(a)(iii)	palisade mesophyll cell ; spongy mesophyll cell ; guard cell ;	1	
6(b)(i)	rate of photosynthesis increases as temperature rises ; data quote ; rate doubles with 10 °C rise in temperature ; rate increases steadily / AW ;	2	

Question	Answer	Marks	Guidance
6(b)(ii)	chemical reactions occur faster at higher temperature ; diffusion more rapid at higher temperatures ; enzymes work faster at higher temperatures ; particles have more energy (at higher temperatures) so move more quickly ; (and so) make more frequent collisions ;	2	
6(b)(iii)	<i>prediction:</i> rate of photosynthesis would decrease / stop ; <i>reason:</i> enzymes destroyed / AW ;	2	A plant dies / wilts / is dehydrated A plant loses water / transpires more rapidly than it can absorb water
	Total:	10	

Question	Answer	Marks	Guidance
7(a)	<u>deforestation</u> ; <u>photosynthesis</u> ; <u>carbon dioxide</u> ; methane / water vapour ;	4	
7(b)	more land area ; for farming / grow crops / rear animals / for building houses / factories etc. / approaching enemies can be seen / for roads / pylons / fences etc. / for mines ;; obtain wood ; for building / making furniture / warmth / cooking / make smoke / to make paper ;; to destroy habitats (of unwanted animals / plants) ; to deter wild / dangerous animals ; AVP ;	4	
7(c)	flooding ; soil erosion ; leaching ; mud slides ; desertification ; changing weather patterns ; habitat destruction / extinction / loss of biodiversity ; loss of potential medical chemicals ; AVP ;;	2	
	Total:	10	

Question	Answer	Marks	Guidance
8(a)(i)	the Sun ;	1	
8(a)(ii)	transfer of energy ;	1	
8(a)(iii)	three ;	1	
8(a)(iv)	<u>snake</u> ;	1	
8(a)(v)	<i>number of hawks:</i> would increase / AW ; <i>explanation:</i> lizards / grasshoppers / slugs, not eaten by snakes ; so increase in number ; more food for hawks ;	3	max 2 for explanation A (more slugs as not eaten) so more blackbirds ;
8(b)(i)	line drawn from snakes to eagles and line from lizards to eagles with arrows in correct direction ;	1	
8(b)(ii)	<i>increase eagles</i> more snakes / more lizards / other food source ; <i>decrease eagles</i> fewer snakes / fewer lizards / disease / competition (with another species) / natural disaster ;	2	
8(b)(iii)	<i>population:</i> organisms of same species / type ; living in same area / at the same time ;	2	
	Total:	12	

Question	Answer	Marks	Guidance
9(a)	L sperm duct; M prostate gland; N <u>urethra</u> ; P <u>scrotum</u> ; R testis;	5	
9(b)(i)	(centre of) X on testis ;	1	
9(b)(ii)	circle drawn at end of the urethra ;	1	
9(c)	<i>prostate gland</i> : produces liquid (so the sperm can swim) / produces mucus / produces alkaline liquid; <i>scrotum</i> : protects the testis / keeps testis, cool / below body temperature;	2	A produces nutrient / glucose
9(d)	condom / femidom / diaphragm ;	1	
	Total:	10	