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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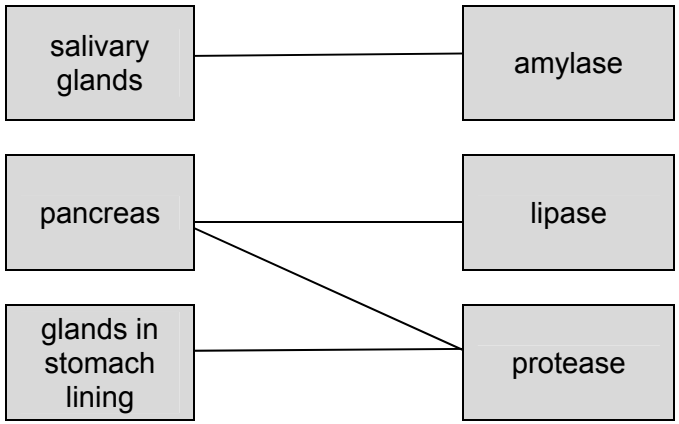
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Abbreviations used in the Mark Scheme:

- **;** 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
- underline actual words given must be used by the candidate (or grammatical variants of them)

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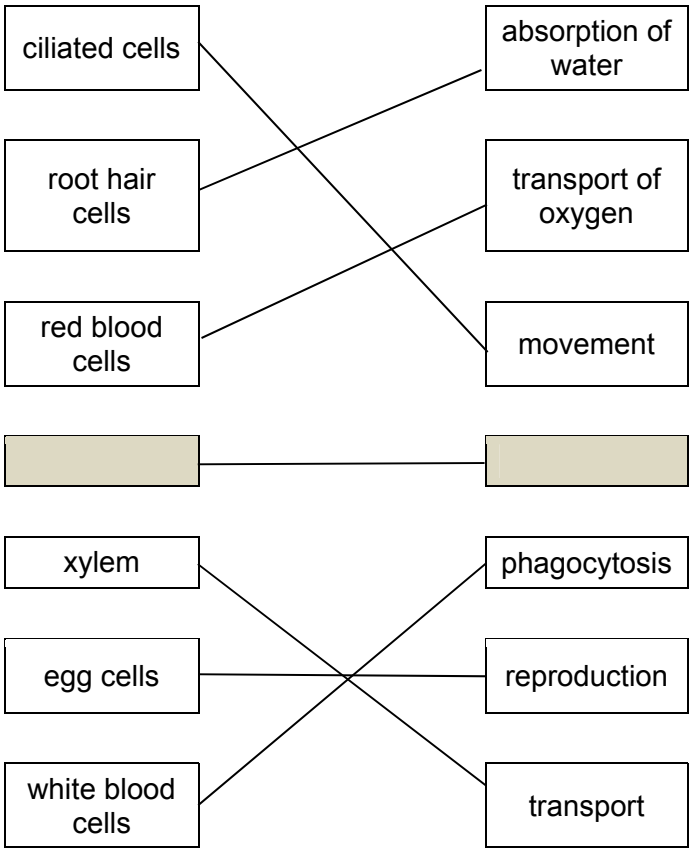
Question	Answer	Marks	Guidance
1	 ;;;;	4	one mark for each correct line deduct one mark for each extra line drawn
	Total:	4	

Question	Answer	Marks	Guidance
2(a)(i)	A = aorta ; B = pulmonary vein ; C = atrium ; D = ventricle ; E = muscular wall ;	5	
2(a)(ii)	right ventricle ;	1	
2(b)(i)	5 and 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**	

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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><tr><th>amphibians</th><th>reptile</th><th>bird</th><th>mammal</th></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> ;;;;;	**5**	one mark for each correct row
	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**	

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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)	*prediction:* rate of photosynthesis would decrease / stop ; *reason:* 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)	deforestation ; photosynthesise ; carbon dioxide ; 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)	snake ;	**1**	
8(a)(v)	*number of hawks:* would increase / AW ; *explanation:* 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)	*increase eagles* more snakes / more lizards / other food source ; *decrease eagles* fewer snakes / fewer lizards / disease / competition (with another species) / natural disaster ;	**2**	
8(b)(iii)	*population:* organisms of same species / type ; living in same area / at the same time ;	**2**	
	Total:	**12**	

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Question	Answer	Marks	Guidance
9(a)	**L** sperm duct; **M** prostate gland; **N** urethra; **P** scrotum; **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)	*prostate gland:* produces liquid (so the sperm can swim) / produces mucus / produces alkaline liquid; *scrotum:* protects the testis / keeps testis, cool / below body temperature;	**2**	**A** produces nutrient / glucose
9(d)	condom / femidom / diaphragm ;	**1**	
	Total:	**10**	

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