Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/32**

Paper 3 Theory (Core) **May/June 2018**

MARK SCHEME

Maximum Mark: 80

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

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GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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Abbreviations used in the Mark Scheme

- **;** separates marking points
- / separates alternatives within a marking point
- **R** reject
- **ignore** mark as if this material was not present
- **A** accept (a less than ideal answer which should be marked correct)
- AW alternative wording (accept other ways of expressing the same idea)
- underline words underlined (or grammatical variants of them) must be present
- max indicates the maximum number of marks that can be awarded
- mark independently the second mark may be given even if the first mark is wrong
- ecf credit a correct statement that follows a previous wrong response
- ( ) the word / phrase in brackets is not required, but sets the context
- **ora** or reverse argument
- AVP any valid point

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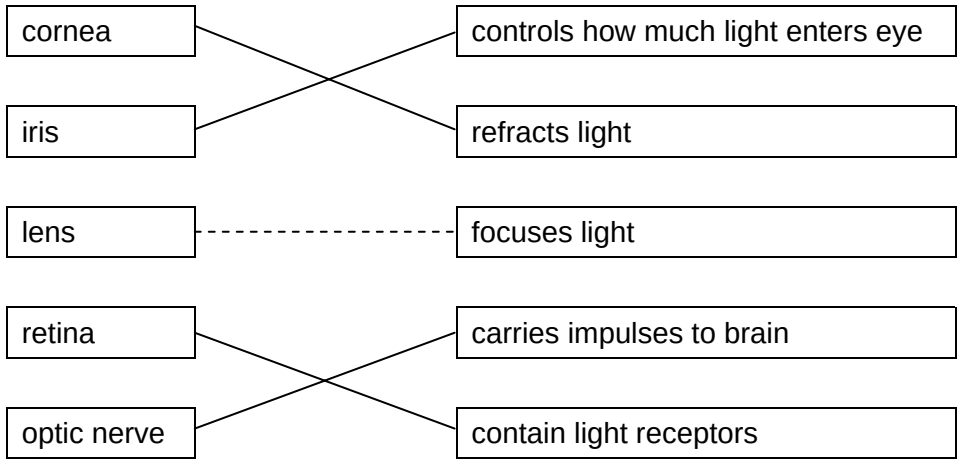
Question	Answer	Marks	Guidance
1(a)	**C ;** **E ;** **B ;**	**3**	
1(b)	sperm is, deposited / AW, in the vagina **;** (travels) through, cervix / uterus **;** to oviduct **;**	**3**	
1(c)(i)	DNA **;** information **;** genes **;**	**3**	
1(c)(ii)	X and Y **;**	**1**	
1(c)(iii)	ref. to tail / flagellum **;** ref. to enzymes **;** AVP **;;** e.g. mitochondria / streamlined shape / haploid nucleus	**2**	**A** acrosome

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Question	Answer	Marks	Guidance
2(a)(i)	yellow / brown **;**	**1**	
2(a)(ii)	blue-black **;**	**1**	
2(a)(iii)	chlorophyll is required for, photosynthesis / production of starch or glucose **;**	**1**	
2(b)	light required, for photosynthesis / to make starch or glucose **;** no photosynthesis took place **;**	**1**	
2(c)(i)	into the root **;** (via) root hair cell **;** by osmosis / diffusion **;** across a partially permeable membrane **;**	**3**	
2(c)(ii)	support / transport of mineral ions **;**	**1**	**A** cooling / solvent / germination
2(c)(iii)	xylem **;**	**1**	
2(c)(iv)	stoma(ta) **;**	**1**	**A** guard cells

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>3(a)(i)</td><td>1995 ;</td><td>1</td><td></td></tr>
<tr><td>3(a)(ii)</td><td>195 (cases per 100 000 people) ;</td><td>1</td><td></td></tr>
<tr><td>3(a)(iii)</td><td>(steady) increase (from 2003) ;
fluctuation between 2007 and 2009 / described ;
level off / plateau / AW, from 2009 ;
data quote with year and number including units ;</td><td>3</td><td></td></tr>
<tr><td>3(b)</td><td>Campylobacter ;</td><td>1</td><td></td></tr>
<tr><td>3(c)</td><td>rehydration / oral rehydration therapy ;</td><td>1</td><td>A water with, sugar and salt / electrolytes</td></tr>
<tr><td>3(d)</td><td><table><tr><th>cellular</th><th>chemical</th><th>mechanical</th></tr><tr><td>phagocytosis</td><td>stomach acid</td><td>nasal hairs</td></tr><tr><td>antibodies</td><td>mucus</td><td>skin</td></tr></table>;;;</td><td>3</td><td>1 mark for each correct column</td></tr>
</table>

Question	Answer	Marks	Guidance
4(a)	iris shaded on diagram **;**	**1**	
4(b)	 **;;;**	**3**	1 mark for 1 correct 2 marks for 2 / 3 correct 3 marks for 4 correct
4(c)(i)	(change in) temperature / cold / fear **;**	**1**	
4(c)(ii)	(hair) erector muscles **;**	**1**	

Question	Answer	Marks	Guidance
5(a)(i)	**K ;** **M ;**	**2**	
5(a)(ii)	combustion **;**	**1**	
5(a)(iii)	arrow drawn from carbon compounds in plants to carbon compounds in animals **;**	**1**	
5(b)	methane **;**	**1**	**A** water vapour / nitrous oxides/ CFCs / ozone
5(c)(i)	habitat destruction **;** extinction **:** soil erosion **;** flooding **;** AVP **;;** e.g. landslides / leaching / disruption to food chains or webs or loss of food source / desertification	**2**	
5(c)(ii)	agriculture **;** mining / extraction, of resources **;** building, houses / factories / industries **;** building, transport links / roads **;** AVP **;** e.g. paper production	**2**	
5(d)(i)	10662.4 **;;**	**2**	**A** 10662 ecf incorrect total ÷ 5 max one mark
5(d)(ii)	deforestation is decreasing / less areas of forest are being removed **;**	**1**	
5(d)(iii)	ref. to, education / awareness **;** protecting areas / national parks **;** legislation **;** AVP **;;** e.g. idea of alternative, sources of energy used / resources	**2**	ecf if wrong trend in 5d(ii)

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Question	Answer	Marks	Guidance
6(a)	bronchiole, diaphragm, intercostal (muscle), trachea labelled **;;;;**	**4**	1 mark for each correct label
6(b)	good blood supply **;** thin **;** ventilated **;** large surface (area) **;** AVP **;** e.g. moist / permeable	**2**	
6(c)(i)	more water vapour **;** more carbon dioxide **;** higher temperature **;**	**2**	**A** saturated **A** warmer
6(c)(ii)	(aerobic) respiration **;**	**1**	**A** removal of lactic acid / oxidation **R** anaerobic respiration
6(d)	*cell* red blood cell / ciliated cell / muscle cell / white blood cell **; A** guard cell *organ* lung / trachea / bronchus / bronchiole / larynx **; A** leaf	**2**	1 mark for example of a cell / goblet cell 1 mark for example of an organ

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>7(a)</td><td>carbon dioxide ;
urea ;</td><td>2</td><td>A (excess) salts</td></tr>
<tr><td>7(b)</td><td><table><tr><th>changing condition</th><th>volume of urine</th><th>concentration of urine</th></tr><tr><td>increase in water uptake</td><td>increase</td><td>decrease</td></tr><tr><td>increase in temperature</td><td>decrease</td><td>increase</td></tr><tr><td>increase in exercise</td><td>decrease</td><td>increase</td></tr></table>;;;</td><td>3</td><td>one mark for each correct row</td></tr>
<tr><td>7(c)(i)</td><td>permanent ;
increase in size ;</td><td>2</td><td></td></tr>
<tr><td>7(c)(ii)</td><td>movement ;
respiration ;
sensitivity ;
reproduction ;
nutrition ;</td><td>3</td><td></td></tr>
</table>

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>8(a)</td><td>limited number of, phenotypes / categories / groups ;
no intermediates / AW ;</td><td>1</td><td></td></tr>
<tr><td>8(b)</td><td><table>
<tr><td>attached or unattached earlobes</td><td>✓</td></tr>
<tr><td>foot length</td><td></td></tr>
<tr><td>gender (male or female)</td><td>✓</td></tr>
<tr><td>height</td><td></td></tr>
<tr><td>tongue rolling</td><td>✓</td></tr>
<tr><td>weight</td><td></td></tr>
</table>;;;</td><td>3</td><td>deduct one for each additional box ticked</td></tr>
<tr><td>8(c)</td><td>is a genetic change ;
forms new alleles ;
can be caused by ionising radiation ;</td><td>3</td><td>deduct one for each additional line</td></tr>
</table>

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