Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/33**

Paper 3 Theory (Core) **May/June 2019**

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.

Cambridge International is publishing the mark schemes for the May/June 2019 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

This syllabus is regulated for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

PUBLISHED

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:

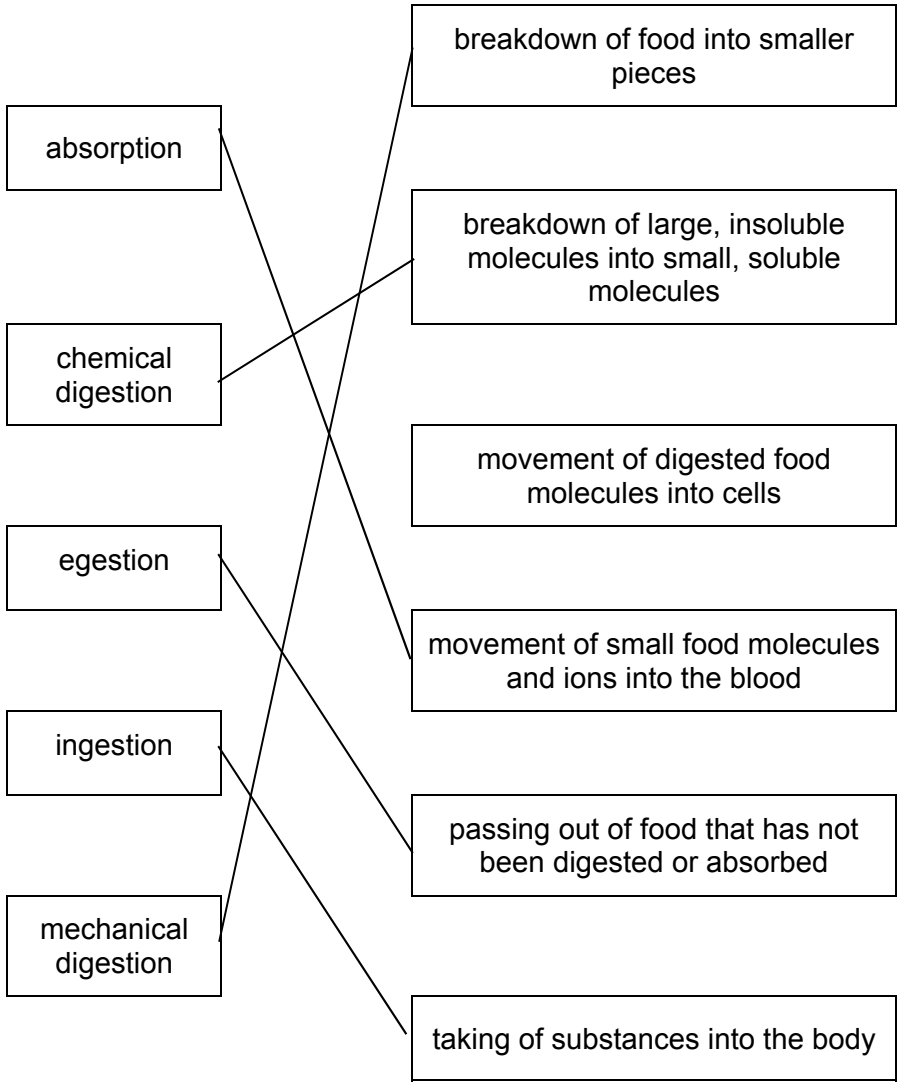
Marks must be awarded **positively**:

- 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.

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.

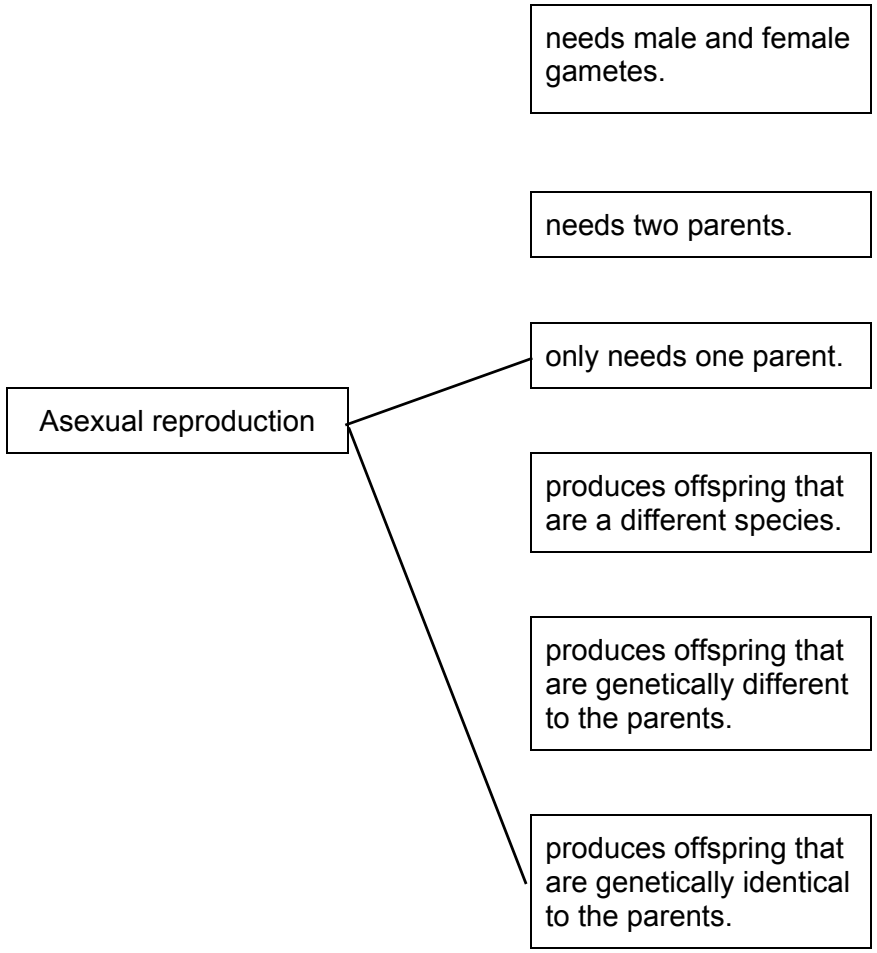
Question	Answer	Marks	Guidance
1(a)(i)	**process** / **description**  ;;;;;	**5**	one mark for each correct linked

Question	Answer	Marks	Guidance
1(a)(ii)	glucose ; amino acids ; fatty acids ; glycerol ;	**1**	
1(b)(i)	bacterium / bacteria ;	**1**	
1(b)(ii)	loss of watery faeces / AW ;	**1**	
1(b)(iii)	oral rehydration therapy ; intake of water containing, salt / ions, and sugar ; AVP ;;	**2**	

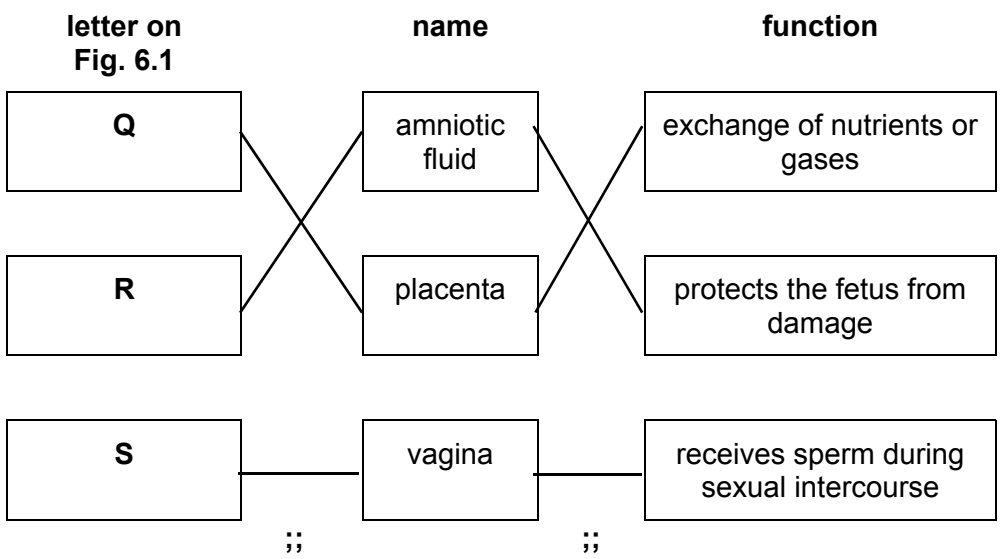
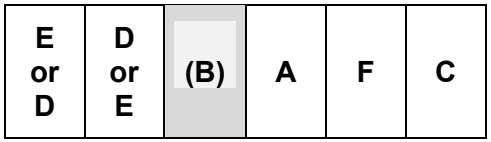
Question	Answer	Marks	Guidance
2(a)	spongy mesophyll ; evaporates ; diffusion ; stomata ;	**4**	
2(b)(i)	0.27 ;	**1**	
2(b)(ii)	**F** lost the most mass ; **J** lost the least / did not lose any mass ; **H** lost less mass than **G** / **G** lost more mass than **H** ; leaves with the lower surface uncovered lost the most mass / AW ;	**3**	
2(b)(iii)	more (exposed) stomata on **H** / AW ; **ora**	**1**	
2(c)(i)	**K** ;	**1**	
2(c)(ii)	**L** ; xylem ;	**2**	

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>3(a)(i)</td><td>(antibiotic), killed the bacteria / stopped the growth of bacteria ;</td><td>1</td><td></td></tr>
<tr><td>3(a)(ii)</td><td>(most effective) 2 1 3 (least effective) ;
reason:
more bacteria killed / more clear area / AW ;</td><td>2</td><td></td></tr>
<tr><td>3(b)</td><td>cytoplasm ;
DNA ;
cell wall ;
cell membrane ;</td><td>3</td><td>A ribosome ;</td></tr>
<tr><td>3(c)</td><td><table><tr><th>example</th><th>direct contact</th></tr><tr><td>air</td><td></td></tr><tr><td>blood</td><td>✓ ;</td></tr><tr><td>body fluids</td><td>✓ ;</td></tr><tr><td>contaminated food</td><td></td></tr><tr><td>contaminated surfaces</td><td></td></tr></table></td><td>2</td><td></td></tr>
</table>

Question	Answer	Marks	Guidance
4(a)(i)	mammal / vertebrates ;	**1**	
4(a)(ii)	fur / hair ;	**1**	
4(b)	fusion of the nuclei of two gametes ; to form a zygote ; production of genetically different offspring ;	**3**	

Question	Answer	Marks	Guidance
4(c)		**2**	1 mark for each correctly linked box

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>5(a)</td><td>large surface area ;
thin (membrane) ;
good blood supply ;</td><td>2</td><td></td></tr>
<tr><td>5(b)(i)</td><td>limewater ;
cloudy / milk appearance ;</td><td>2</td><td></td></tr>
<tr><td>5(b)(ii)</td><td><table><tr><th>gas</th><th>percentage in inspired air</th><th>percentage in expired air</th></tr><tr><td>carbon dioxide</td><td>0.04</td><td>4.00 ;</td></tr><tr><td>oxygen</td><td>21.00 ;</td><td>16.00</td></tr><tr><td>Z</td><td>1.00</td><td>2.00</td></tr><tr><td>nitrogen</td><td>78.00</td><td>78.00</td></tr></table></td><td>2</td><td></td></tr>
<tr><td>5(b)(iii)</td><td>water vapour ;</td><td>1</td><td></td></tr>
<tr><td>5(c)(i)</td><td>increase / AW ;
(increases) then constant ;
(constant) from 10 minutes (onwards) ;
data quote with units ;</td><td>3</td><td></td></tr>
<tr><td>5(c)(ii)</td><td>150(%) ;;</td><td>2</td><td></td></tr>
<tr><td>5(c)(iii)</td><td>ECG ;
pulse rate / heart rate ;
listening to the valves closing ;
AVP ; e.g. stethoscope</td><td>2</td><td></td></tr>
</table>

Question	Answer	Marks	Guidance
6(a)(i)	 ;; ;;	4	per column: 3 correct = 2 marks 1 or 2 correct = 1 mark
6(a)(ii)	**E** and **D** in either order before **B** ; **A** after **B** ; **A** before **F** or **C** ;	3	
6(b)(i)	calcium / vitamin D ;	1	
6(b)(ii)	red blood cells / haemoglobin ;	1	
6(b)(iii)	meat / fish / poultry / seafood / soya / lentils / beans / peas / green vegetables / spinach / fortified cereals / tablets / AVP ;	1	
6(b)(iv)	crosses the placenta / harms the fetus / AW ;	1	

Question	Answer	Marks	Guidance
7(a)	glucose and oxygen ⟶ ; carbon dioxide and water ;	**2**	
7(b)(i)	oxygen used by woodlice ; correct reference to (aerobic) respiration ; carbon dioxide given out (by woodlice) ; carbon dioxide does not increase volume of air as it is absorbed by soda lime ; volume of air in the tube decreases **/** pressure decreases in the tube / AW ;	**3**	
7(b)(ii)	respiration uses enzymes ; at high temperatures enzymes stop working / woodlice die ; AVP ; e.g. ethical treatment of woodlice / AW	**2**	
7(b)(iii)	muscle contraction / movement / AW ; protein synthesis ; cell division ; active transport ; growth ; passage of nerve impulses ; maintenance of body temperature ;	**2**	

Question	Answer	Marks	Guidance
8(a)(i)	caterpillar ;	**1**	
8(a)(ii)	thrush ;	**1**	
8(a)(iii)	the Sun ;	**1**	
8(b)(i)	Fig.8.1 has fewer producers than Fig. 8.2 / AW ; ora	**1**	
8(b)(ii)	*frogs* population increase ; lack of, predator / trout ; *insects* population decrease ; increased predation ;	**4**	
8(c)	carnivores [ ] decomposers [✓ ;] herbivores [ ] producers [ ]	**1**	