Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/33**

Paper 3 Theory (Core) **October/November 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.

Cambridge International is publishing the mark schemes for the October/November 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

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

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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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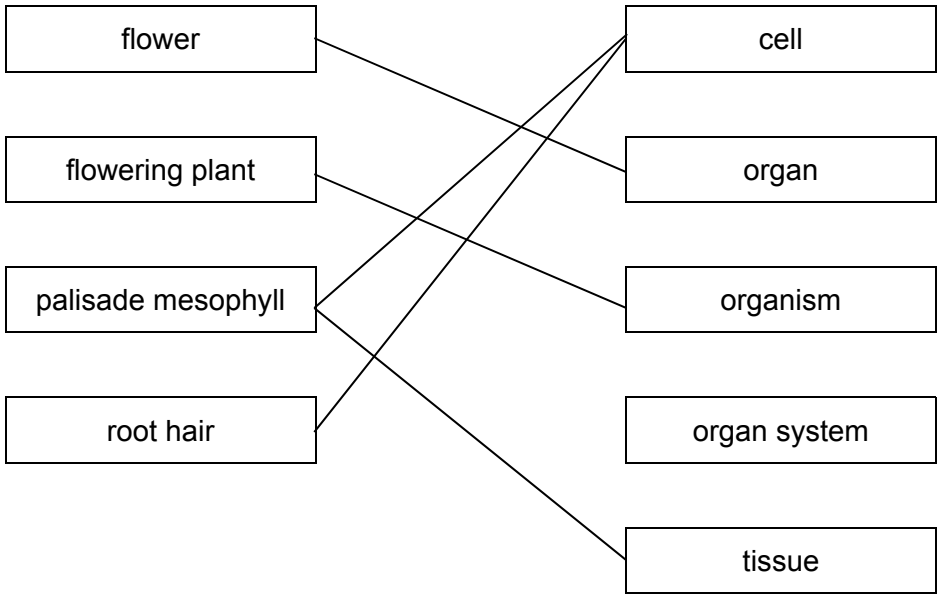
Mark scheme abbreviations

- **;** separates marking points
- **/** alternative responses for the same marking point
- **R** reject the response
- **A** accept the response
- **I** ignore the response
- ecf error carried forward
- AVP any valid point
- ora or reverse argument
- AW alternative wording
- underline actual word given must be used by candidate (grammatical variants excepted)
- ( ) the word / phrase in brackets is not required but sets the context

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Question	Answer	Marks	Guidance
1(a)	jointed legs ; exoskeleton / external skeleton ; segmented / sectioned, body ;	**1**	
1(b)(i)	3 pairs of legs / 6 legs ; wings ; body divided into, 3 sections / head, thorax and abdomen ; compound eye ;	**1**	
1(b)(ii)	**E** ; 5 pairs of legs / AVP ;	**2**	
1(c)(i)	**F** ;	**1**	
1(c)(ii)	arachnids ;	**1**	

Question	Answer	Marks	Guidance
2(a)	*cell* ↓ tissue ; ↓ organ ↓ ; organ system ↓ organism ;	**3**	organ before organ system

Question	Answer	Marks	Guidance
2(b)	 ;;;;	**4**	4 or 5 correct lines = 4 marks 3 correct = 3 marks 2 correct = 2 marks 1 correct = 1 mark **A** palisade mesophyll linked to cell or tissue or both **A** flower as an organ **or** an organ system

Question	Answer	Marks	Guidance
3(a)(i)	(green) alga ;	**1**	
3(a)(ii)	organism that makes its own (organic) nutrients ; (usually) using energy from sunlight / through photosynthesis ;	**2**	
3(a)(iii)	<u>crab</u> ;	**1**	
3(a)(iv)	<u>sea snail</u> ;	**1**	
3(a)(v)	transfer of energy / energy flow ;	**1**	

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Question	Answer	Marks	Guidance
3(b)	more sea snails, less green algae, fewer starfish ; more sea snails because, fewer crabs / less predation / AW ; less (green) algae because, more snails / more predation / AW ; fewer starfish because, fewer crabs / less food / AW ;	**3**	

Question	Answer	Marks	Guidance
4(a)(i)	deforestation ;	**1**	
4(a)(ii)	extinction / species become endangered / loss of biodiversity ; loss of soil ; flooding ; increased carbon dioxide concentration (in the atmosphere) ; loss of, breeding sites / food / shelter, **or** animals migrate / AW ; food chain disruption ; AVP;	**3**	
4(b)	growing (named) crops / AW ; livestock production / AW ; extraction of natural resources / mining / dredging ; building / urbanisation / AW ; (named) pollution / AW; AVP ;	**3**	
4(c)	monitoring / protecting, species ; protecting habitats / nature reserves / removing alien species / reinstating habitat / AW ; ref to education / awareness ; legislation /control of trade (of organisms) / ban hunting ; captive breeding programmes ; seed banks / zoo / wildlife parks / botanic gardens / tissue banks ; AVP ;	**3**	

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Question	Answer	Marks	Guidance
4(d)	<table><tr><th>pollutant</th><th>environment</th><th>effect of pollutant on the environment</th></tr><tr><td>methane</td><td>air</td><td>enhanced greenhouse effect / global warming / heating the atmosphere ;</td></tr><tr><td>herbicides</td><td>land / water ;</td><td>kills non-targeted plants</td></tr><tr><td>fertiliser / sewage / nitrates / nitrogen ;</td><td>water</td><td>increased growth of surface plants</td></tr></table> ;;;	3	

Question	Answer	Marks	Guidance
5(a)	<table><tr><th>genotype</th><th>black coat</th><th>red coat</th></tr><tr><td>**EE**</td><td>✓</td><td></td></tr><tr><td>**Ee**</td><td>✓</td><td></td></tr><tr><td>**ee**</td><td></td><td>✓</td></tr></table> ; ;	2	1 mark per correct column
5(b)	variation ;	1	
5(c)	humans select individuals with (named) desirable feature / AW ; mate / breed / cross, them together ; select the offspring with the desired features / AW ; repeat over many generations / AW ;	3	

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Question	Answer	Marks	Guidance
5(d)	feature not chosen by humans / AW ; *idea of* adapted to / better chance of survival in, their environment / AW; AVP ;	**2**	

Question	Answer	Marks	Guidance
6(a)(i)	anaerobic ;	**1**	
6(a)(ii)	glucose / sugar ;	**1**	
6(b)(i)	a protein ; that functions as a (biological) catalyst ;	**2**	
6(b)(ii)	carbon dioxide ;	**1**	
6(b)(iii)	12 (bubbles per minute) ;	**1**	
6(b)(iv)	35 (°C) ;	**1**	
6(c)	*slice B:* pH (too) low / acidic / not optimum pH / enzymes stops working at this pH / AW ; *slice C:* temperature (too) low / cold / not optimum temperature ;	**2**	
6(d)	increases the quantity of juice produced / AW ; speeds up the, process / reaction ; breaks down pectin ; makes clearer juice ; AVP ;	**3**	
6(e)	(named) protective clothing / clothing only worn at the factory ; example of personal hygiene ; cleaning, factory / equipment / clothing ; AVP ;	**3**	

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Question	Answer	Marks	Guidance
7(a)(i)	white (blood cells) ;	**1**	
7(a)(ii)	phagocytosis ; antibody production ; (blood) clotting ;	**2**	
7(b)(i)	(infection that is transmitted) via body fluids ; through sexual contact ;	**2**	
7(b)(ii)	antibiotics, are only effective against bacteria / do not affect viruses ; HIV is a virus ;	**2**	
7(b)(iii)	use of condoms / femidoms / abstinence (from sex) ; tracing of sexual contacts ; testing for STIs ; treating infections ; education ; AVP ;	**3**	

Question	Answer	Marks	Guidance
8(a)(i)	<table><tr><th>function</th><th>letter in Fig. 8.1</th><th>name of the part</th></tr><tr><td>produces insulin</td><td>**D** ;</td><td>pancreas ;</td></tr><tr><td>produces hydrochloric acid</td><td>**B** ;</td><td>stomach ;</td></tr><tr><td>produces urea</td><td>**C** ;</td><td>liver ;</td></tr></table>	**6**	
8(a)(ii)	**G** ;	**1**	
8(a)(iii)	kills bacteria / pathogens (in food) ; gives, an acid / optimum, pH for enzymes ;	**1**	

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Question	Answer	Marks	Guidance
8(b)	amino acids ; ureter ; bladder ; urethra ;	**4**	

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