Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/33**

Paper 3 Theory (Core) **October/November 2017**

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

Mark schemes will use these abbreviations

- **;** separates marking points
- / alternatives
- **I** **I**
- **R** reject
- **A** **A** (for answers correctly cued by the question, or guidance for examiners)
- AW alternative wording (where responses vary more than usual)
- 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 word given must be used by candidate (grammatical variants excepted)
- max indicates the maximum number of marks that can be given

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>1(a)</td><td>any 2 from
feathers / beak / wings / hard-shelled eggs / two legs ;;</td><td>2</td><td></td></tr>
<tr><td>1(b)</td><td><table><tr><th>name of bird</th><th>letter</th></tr><tr><td>pied avocet</td><td>A</td></tr><tr><td>Andean avocet</td><td>B</td></tr><tr><td>common sandpiper</td><td>C</td></tr><tr><td>banded stilt</td><td>E</td></tr><tr><td>whimbrel</td><td>D</td></tr></table>;;;;</td><td>4</td><td>4 or 5 correct = 4 marks
3 correct = 3 marks
2 correct = 2 marks
1 correct = 1 mark</td></tr>
<tr><td>1(c)(i)</td><td>idea of long legs allow them to wade in shallow water ;

idea of long beaks to, dig up / catch their prey ;

AVP ;</td><td>2</td><td></td></tr>
<tr><td>1(c)(ii)</td><td>natural selection ;</td><td>1</td><td>A adaptation / evolution / survival of the fittest</td></tr>
</table>

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>2(a)(i)</td><td>H ;</td><td>1</td><td></td></tr>
<tr><td>2(a)(ii)</td><td>bladder ;</td><td>1</td><td></td></tr>
<tr><td>2(b)</td><td>(ureter) carries, urine/urea, from the kidneys / to the bladder ;

(urethra) carries, urine/urea, from the bladder to the outside ;</td><td>2</td><td>A transports urine for 1 mark only</td></tr>
<tr><td>2(c)(i)</td><td>amino acids ;</td><td>1</td><td>R if more than one answer</td></tr>
<tr><td>2(c)(ii)</td><td>liver ;</td><td>1</td><td></td></tr>
<tr><td>2(d)</td><td>
<table>
<tr><th colspan="2">rest day</th><th colspan="2">race day</th></tr>
<tr><th>water input from / cm^3</th><th>water loss from / cm^3</th><th>water input from / cm^3</th><th>water loss from / cm^3</th></tr>
<tr><td>respiration 400</td><td>faeces 100</td><td>respiration 500</td><td>faeces 100</td></tr>
<tr><td>food 500</td><td>skin 400</td><td>food 500</td><td>skin 1900</td></tr>
<tr><td>drink 1500</td><td>breathing 400</td><td>drink 2000</td><td>breathing 600</td></tr>
<tr><td></td><td>urine 1500</td><td></td><td>urine 400</td></tr>
<tr><td>Total 2400</td><td>Total 2400</td><td>Total 3000</td><td>Total 3000</td></tr>
</table>
;
;
</td><td>2</td><td>4 correct = 2
2 or 3 correct = 1
1 correct = 0</td></tr>
<tr><td>2(e)</td><td>increased volume (of urine) ;

(urine is) more dilute / less concentrated ;</td><td>2</td><td></td></tr>
</table>

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>3(a)</td><td>
<table>
<tr><th>action</th><th>chronic obstructive pulmonary disease</th><th>coronary heart disease</th><th>HIV infection</th><th>liver disease</th><th>lung cancer</th></tr>
<tr><td>drinking alcohol</td><td></td><td>(✓)</td><td></td><td>✓</td><td></td></tr>
<tr><td>injecting heroin</td><td></td><td>(✓)</td><td>✓</td><td>(✓)</td><td></td></tr>
<tr><td>smoking tobacco</td><td>✓</td><td>✓</td><td></td><td></td><td>✓</td></tr>
</table>
;
;
;</td><td>3</td><td></td></tr>
<tr><td>3(b)</td><td>contains nicotine ;
addictive / withdrawal symptoms / AW ;</td><td>2</td><td></td></tr>
<tr><td>3(c)(i)</td><td>woman’s blood alcohol reaches a higher peak ;

woman’s blood alcohol reaches its peak later / slower ;

woman’s blood alcohol takes longer to return to the original level / AW ;

after 12 minutes the woman’s blood alcohol is higher than the man’s ;</td><td>2</td><td></td></tr>
<tr><td>3(c)(ii)</td><td>70 ;</td><td>1</td><td></td></tr>
<tr><td>3(c)(iii)</td><td>20 ;</td><td>1</td><td>ecf from 3(c)(ii)</td></tr>
<tr><td>3(c)(iv)</td><td>differences in size / ref. to enzyme activity / metabolism / genetic predisposition / age / more active liver / AVP ;</td><td>1</td><td>A different food intake / tolerance to alcohol</td></tr>
</table>

Question	Answer	Marks	Guidance
4(a)	**G** as first letter ; **E D F** in the middle ; **A** as the last letter ;	**3**	**A EFD**
4(b)	barrier ; surgical ; chemical ;	**3**	
4(c)(i)	(infection transmitted) via exchange of (named)body fluids ; during sexual contact ;	**2**	
4(c)(ii)	AIDS ;	**1**	
4(c)(iii)	(contaminated) blood transfusions / organ transplants / sharing needles / breast feeding / birth / blood to blood contact / AVP ;	**1**	**R** saliva

Question	Answer	Marks	Guidance
5(a)(i)	pollen (grains) ;	**1**	
5(a)(ii)	ovules ;	**1**	
5(a)(iii)	anthers ;	**1**	
5(a)(iv)	stigma ;	**1**	
5(b)	*insect - pollinated* petal shape / landing platform / mimicry AW ; colour ; nectar / nectaries ; guideline ; sticky / spikey / large, pollen ; anthers / stamens enclosed ; *wind - pollinated* small / no petals ; exposed anther / stigma ; feathery stigma ; loosely attached anthers ; large quantity of pollen ; smooth / light, pollen ;	**4**	max 3 from either section. **I** scent / smell **I** any ref to seeds
5(c)	(suitable) temperature ; oxygen ; water ;	**2**	

Question	Answer	Marks	Guidance
6(a)	(they are) producers ; makes its own food ; ref to photosynthesis ; animals / consumers cannot make their own food / get food from plants ;	**3**	
6(b)(i)	desert plants → kangaroo rat / lizard → snake → hawk ;	**1**	**R** if more or less than 4 organisms given
6(b)(ii)	hawk ; snake ; fox ;	**2**	
6(c)	*scorpions* population decrease ; less food ; *desert plants* population increases ; idea of less predation / less herbivores / primary consumers to eat them / AW ;	**4**	

Question	Answer	Marks	Guidance
7(a)(i)	chlorophyll ;	**1**	
7(a)(ii)	palisade (mesophyll) ;	**1**	**A** guard cell / spongy mesophyll cell
7(b)(i)	cuticle ;	**1**	
7(b)(ii)	(upper) epidermis ;	**1**	
7(c)	*xylem* water / mineral ions ; *phloem* sugars ;	**2**	**A** other correctly named molecules e.g. sucrose / amino acids
7(d)(i)	stomata ;	**1**	
7(d)(ii)	carbon dioxide ;	**1**	**A** water <u>vapour</u>
7(d)(iii)	oxygen ;	**1**	

Question	Answer	Marks	Guidance
8(a)(i)	hormones ;	**1**	
8(a)(ii)	pancreas ;	**1**	
8(a)(iii)	reduce blood, sugar / glucose, concentration ;	**1**	
8(b)	blood / plasma ;	**1**	
8(c)(i)	changing the genetic material (of an organism) ; by, removing / changing / inserting individual genes ;	**2**	
8(c)(ii)	herbicide resistance / pest resistance / production of vitamins / drought resistance / frost resistance / AVP ;	**1**	

Question	Answer	Marks	Guidance
9(a)(i)	(male) black (fur) (female) white (fur) **;**	**1**	
9(a)(ii)	**bb ;**	**1**	
9(a)(iii)	**Bb ;**	**1**	
9(b)(i)	**BB** and **Bb ;**	**1**	
9)b)(ii)	3 (black) : 1 (white) **;**	**1**	