Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/63**

Paper 6 Alternative to Practical **May/June 2018**

MARK SCHEME

Maximum Mark: 40

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.

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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)(i)	0.5 ;	**1**	
1(a)(ii)	table drawn with 3 columns and header line ; headings and units ; twelve measurements within the acceptable range ; correct averages calculated ;	**4**	
1(a)(iii)	the higher the salt concentration the smaller the gap / AW ; **ora**	**1**	
1(b)	use of knife / cutting ; cut on solid surface / cut away from body / avoid fingers ;	**2**	**I** carefully / gloves
1(c)	to find an average ; to see if measurements are comparable / AW ; to find outlier / anomalous results / measurements show variation ;	**2**	
1(d)(i)	salt <u>concentration</u> ;	**1**	
1(d)(ii)	number of rings ; volume of solution; species of plant ; length of stem ; soaking time ;	**2**	**R** salt concentration **I** cutting / Petri dishes

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Question	Answer	Marks	Guidance
1(e)	*error* / *improvement* cutting to same length / use of a ruler stems measured at different times / stagger start of investigation difficult to measure distance between ends / use magnifier starting distance not known / stem diameter varies / measure, gap / diameter, before timing evaporation of salt solutions / cover Petri dishes rings change during measurement / keep rings in solution stems mixed up / stems labelled **;;;;**	**4**	2 + 2 improvement must match stated error
1(f)	(length of **AB)** 28 mm **;** 0.56 **;;**	**3**	**A** 27-29 mm **A** correct values in cm or μm

Question	Answer	Marks	Guidance
2(a)	**O** (utline) single clear line no shading **;** **S** (ize) use at least half available space **;** **D** (etail) dots visible **;** **D** (etail) 7 / 8 / 9 sections visible **;**	**4**	

Question	Answer	Marks	Guidance
2(b)	*one similarity* both have dots **;** both have bars **;** number of wings **;** colours **;** antennae / head **;** *two differences* wing, shape / position **;** pattern / viceroy, has a dark horizontal band in lower half of hindwing **;** shape of dots **;** number of dots **;** monarch / monarch's wings, larger **; ora**	**3**	**1 + 2**
2(c)(i)	**A**(xes) – labels with units mass / g **and** length / mm **;** **S**(cale) – suitable even scale and data occupies more than half the grid in at least one direction **;** **P**(lot) – all points plotted accurately ± half a small square **;** **L(**ine) – suitable line drawn through points **;**	**4**	**R** line through zero
2(c)(ii)	as body mass increases wing length increases / AW **;**	**1**	
2(c)(iii)	correct use of graph **;** correct value **;**	**2**	**ecf**

Question	Answer	Marks	Guidance
2(d)	collect samples of nectar (from plants) ; (repeat test on) more than one sample ; named nutrient molecule ; perform (named) food tests ;; details of food testing method ;; detail of positive and negative food test results ; valid safety precaution ; AVP ; e.g. sample from plants at different times of year to see if content changes / AW	**6**	max 4 for food test details