



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY

0610/52

Paper 5 Practical Test

October/November 2016

MARK SCHEME

Maximum Mark: 40

Published

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

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This document consists of **9** printed pages.

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Abbreviations used in the Mark Scheme:

- ; separates marking points
- / alternatives
- I ignore
- R reject
- A accept (for answers correctly cued by the question, or guidance for examiners)
- AW alternative wording
- 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 words given must be used by the candidate (or grammatical variants of them)

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Question	Mark scheme	Mark	Guidance	
1(a)	any 2 of:		2 comparisons must match	
	feature	seedlings grown in light		seedlings grown in dark
	height	short(er)		tall (er)
	colour	green		yellow / light green
	coleoptiles	green / pink / brown / short		white / pale pink / brown / long
	leaves	two or three leaves / wider		one or two leaves
	coleoptile / shoot / stem	wide(er)		narrow(er)
	coleoptile / shoot / stem	almost vertical / upright		bent / AW

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Question	Mark scheme	Mark	Guidance
1(b)(i)	<p>1 one table drawn with (ruled) lines;</p> <p>2 column/row headings with units in the header only;</p> <p>3 trials identified / numbered;</p> <p>4 twelve measurements recorded in the appropriate light and dark conditions;</p> <p>5 all coleoptile lengths should be shorter than the total length;</p> <p>6 majority of measurements are consistent with Supervisor's range;</p>	6	R if measurements recorded are inconsistent with the unit heading

Page 5	Mark Scheme	Syllabus	Paper
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Question	Mark scheme	Mark	Guidance														
1(b)(ii)	<i>any 2 of:</i> 1 the seeds germinate in both light and dark; 2 light is needed for the leaves become green (as chlorophyll is made / ora ; 3 idea that seedlings grow longer (and thinner) without light (because there is no light) / ora ;	2															
1(c)(i)	add biuret reagent to the crushed seed / crushed seed and water (and observe the colour change);	1	R if heated														
1(c)(ii)	<table border="1"><tr><td rowspan="2">test reagent</td><td colspan="2">results</td></tr><tr><td>seedlings grown in light</td><td>seedlings grown in dark</td></tr><tr><td>biuret</td><td>purple</td><td>purple</td></tr><tr><td>Benedict's</td><td>blue</td><td>blue;</td></tr><tr><td>iodine</td><td>blue-black</td><td>blue-black;</td></tr></table>	test reagent	results		seedlings grown in light	seedlings grown in dark	biuret	purple	purple	Benedict's	blue	blue;	iodine	blue-black	blue-black;	2	
test reagent	results																
	seedlings grown in light	seedlings grown in dark															
biuret	purple	purple															
Benedict's	blue	blue;															
iodine	blue-black	blue-black;															
1(c)(iii)	(maize stores) starch and protein (reducing sugar);	1															

Page 6	Mark Scheme	Syllabus	Paper
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Question	Mark scheme	Mark	Guidance
1(d)(i)	<p><i>any 6 of:</i></p> <ol style="list-style-type: none"> 1 ref. to using same species/type/age of maize; 2 ref. to finding starting (dry) mass; 3 ref. to method of drying; 4 ref. to <u>planting</u> maize (grains) in soil/AW; 5 ref. to planting two sets of at least 100 maize/seeds; 6 ref. to keeping (both sets) in a warm room at/given °C/constant temperature; 7 one other valid detail of the method; 8 ref. to one set place in (constant) light/ref. to one set placed in (constant) dark; 9 ref to removing (10) seedlings (from each set) every two days for drying and weighing 10 repeat <u>and</u> calculate the mean/average; 	6	
1(d)(ii)	<p>water content in, seeds/seedlings, is variable;</p> <p>for comparisons to be valid;</p>	1	
		Total: 21	

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Question	Mark scheme	Mark	Guidance						
2(a)(i)	<u>94</u> ; <u>134</u> ;	2							
2(a)(ii)	same time / 2 minutes for whole exercise; same time / 10 minutes for rest between exercises; same rate / every 2 sec for each jump; equal numbers of male and female students; idea of same students in each exercise;	2							
2(a)(iii)	to allow pulse rate to recover / return to normal / resting (before doing another exercise); so the effect of the two exercises can be compared;	1							
2(a)(iv)	<table><tr><th>variable</th><th>effect on results</th></tr><tr><td>idea of effort put into exercise;</td><td>more effort would make pulse rate increase more;</td></tr><tr><td>idea of fitness;</td><td>pulse would increase less for fitter students;</td></tr></table>	variable	effect on results	idea of effort put into exercise;	more effort would make pulse rate increase more;	idea of fitness;	pulse would increase less for fitter students;	2	
variable	effect on results								
idea of effort put into exercise;	more effort would make pulse rate increase more;								
idea of fitness;	pulse would increase less for fitter students;								

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Question	Mark scheme	Mark	Guidance
2(b)(i)	<p>A(xes) – labelled with units on y axis;</p> <p>S(cale) – suitable even linear scale and plots to fill more than half of the printed grid;</p> <p>P(lot) – all points plotted accurately $\pm \frac{1}{2}$ square;</p> <p>B(ars) – have a gap between each component;</p>	4	R if line graph drawn
2(b)(ii)	<p><i>any 1 of:</i></p> <p>(s) exercise increases heart / pulse rate;</p> <p>(s) idea that the more intense the exercise the more increase in heart / pulse rate;</p> <p><i>any 1 from</i></p> <p>(d) jumping without moving arms shows greater increase in males than females;</p> <p>(d) jumping and moving arms shows greater increase in females than males;</p>	2	I ref. to resting pulses rate

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Question	Mark scheme	Mark	Guidance
2(c)(i)	<i>drawing of cross section of artery</i> O (utline) – single clear lines and without shading; S (ize) – occupies at least half of the space provided; D (etail) to show at least 2 layers and wavy lining;	3	
2(c)(ii)	diameter of lumen = 47 (± 1) mm; diameter of drawing = X ± 1 mm; correct magnification;	3	
		Total: 19	