



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY

0610/62

Paper 6 Alternative to Practical

March 2017

MARK SCHEME

Maximum Mark: 40

Published

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This document consists of **5** printed pages.

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 (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

Question	Answer	Mark	Guidance
1(a)(i)	<ol style="list-style-type: none"> 1 table drawn with appropriate lines and number of cells ; 2 column and row headings and appropriate units for each heading ; 3 correct measurements ; 4 correct calculations of change in length ; 	4	<p>R units in any data cell A cm or mm (if data correct) A ecf from incorrect data measurements</p>
1(a)(ii)	possible that different initial lengths ; <i>ref to</i> percentage change (in length) ;	1	
1(b)(i)	B D A C ;;	2	
1(b)(ii)	<ol style="list-style-type: none"> 1 B gained, water ; 2 (because B) was, hard/larger/AW ; 3 C/A, lost, water ; 4 (because C) was most, floppy/soft/small/AW ; 5 D/A, were between B and C in terms of, length/texture ; 6 A, bent more/smaller than, D ; ora 7 no (net) movement of water in D ; AW 	3	
1(b)(iii)	<ol style="list-style-type: none"> 1 reuse of syringe ; 2 use clean/new, syringes each time ; 3 water loss from tubes ; 4 cover tubes (prevent evaporation) ; 5 potatoes may not be same, type/age/AW ; 6 use same potato/type of potato etc. ; 7 softness/bending, was not quantified ; 8 described method to quantify, bending/softness ; 9 AVP ; 	2	
1(b)(iv)	initial, length/diameter/size/surface area, of potato/type/age/AW, of potato/volume/25 cm ³ , of (sucrose) solution/soaking time ;	1	<p>I amount I time unqualified</p>

Question	Answer	Mark	Guidance
1(c)(i)	<i>idea that</i> (mass) change, would be greater / takes a longer time (so easier to measure) ; allows more time to reach equilibrium ;	1	
1(c)(ii)	surface water would not affect measurement of length ;	1	
1(c)(iii)	Axes – correct axes with axes labels and units ; Scale – even scale and points fill more than half of printed grid ; Plotting - plots all accurate \pm half a small square ; Line ;	4	A x: concentration / g per dm ³ OR concentration / g dm ⁻³ y: percent(age) change in mass OR change in mass / % R extrapolation / feathered line
1(c)(iv)	1 any indication on graph where their expected line intercepts x-axis ; 2 value from graph in g per dm ³ ;	2	
1(c)(v)	(potatoes) of different, age / variety / part / AW ; to calculate an average / identify anomalies ;	1	I mass / size, of potato

Question	Answer	Mark	Guidance
2(a)	O – outline of petals with clear unbroken lines and no shading anywhere ; S – size to fill at least half available space ; D – detail shown ; P – correct proportion ;	4	
2(b)(i)	15 (mm) \pm 1 ;	1	A 1.5 <u>cm</u>
2(b)(ii)	(actual length = $15 \div 2$) 7.5 (mm) ;;	2	A ecf for measurement
2(c)	1 at least 3 different temperatures ; 2 method described to maintain (range of) temperature(s) ; 3 suitable named time period to count number of seeds germinated ; 4&5 named controlled variables ; ; 6 (method to) maintain water levels ; 7 at least 3 dishes per temperature / minimum of 5 seeds per dish ; 8 optimum temperature would have most number of seeds germinated / record at which temperature most seeds germinated / temperature where seeds germinated fastest ; 9 AVP ;	6	A record time for all seeds to germinate A amount of water ; amount oxygen ; humidity ; species / type / variety, of seed ; mass / size / age / number, of seed ; pH ; (measurement) period ; A e.g. cover dishes / repeat watering regularly A e.g. repeat experiment near the optimum temperature
2(d)(i)	cut / mash / crush, the seed (in water) / AW ; add iodine solution ;	2	
2(d)(ii)	blue-black colour ;	1	
2(d)(iii)	1 Benedict's reagent ; 2 (with Benedict's reagent) heat ;	2	