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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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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

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Question	Answer	Mark	Guidance
1(a)(i)	**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**	**R** units in any data cell **A** cm or mm (if data correct) **A** ecf from incorrect data measurements
1(a)(ii)	possible that different initial lengths ; *ref to* percentage change (in length) ;	**1**	
1(b)(i)	**B D A C** ;;	**2**	
1(b)(ii)	**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)	**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**	**I** amount **I** time unqualified

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Question	Answer	Mark	Guidance
1(c)(i)	*idea that* (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)	**A**xes – correct axes with axes labels and units ; **S**cale – even scale and points fill more than half of printed grid ; **P**lotting- plots all accurate ± half a small square ; **L**ine ;	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

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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) ± 1 ;	1	**A** 1.5 cm
2(b)(ii)	(actual length = 15 ÷ 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	

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