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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