Cambridge International Examinations
Cambridge Ordinary Level

BIOLOGY **5090/62**

Paper 6 Alternative to Practical **October/November 2016**

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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2016 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

Mark schemes will use these abbreviations:

;	separates marking points
/	alternatives
()	contents of brackets are not required but should be implied
R	reject
A	accept (for answers correctly cued by the question, or guidance for examiners)
Ig	ignore (for incorrect but irrelevant responses)
AW	alternative wording (where responses vary more than usual)
AVP	alternative valid point (where a greater than usual variety of responses is expected)
ORA	or reverse argument
underline	actual word underlined must be used by candidate (grammatical variants excepted)
+	statements on both sides of the + are needed for that mark

Question	Answer	Guidance	Mark
1(a)(i)	large / broad / wide petals ; (petals form) landing platform **AW** (for insects) ; stamens / filaments erect / sturdy / not pendulous / not hanging ; stigma solid / not feathery ;	**Ig** reference to features not visible in Fig. 1.1	**2**
1(a)(ii)	6 anthers **+** style with stigma drawn ; clear, continuous outlines of anthers **+** no shading anywhere **+** length of style with stigma at least 60 mm ; all filaments drawn with double line **+** all anthers below the level of the top of the stigma ; rounded top of stigma **+** stigma wider than style ;		**4**
1(a)(iii)	A labelling an anther ; B labelling the stigma ; C labelling the style ;		**3**
1(b)(i)	rough / spiny / spiky / thorny **AW** ;		**1**
1(b)(ii)	54 – 56 mm or 5.4 – 5.6 cm ; $\frac{\text{diameter / candidate's measurement}}{\text{magnification (200)}}$; correct answer with correct units ;	correct answer with no working = 2 marks	**3**

Question	Answer	Guidance	Mark
1(c)(i)	prepare sample of fruit ; (add) Benedict's (solution / reagent) ; heat ; (change from) blue to green / yellow / orange / red ;	**A** reference to fruit solution / fruit mixture / fruit extract / crushing **A** hot or warm water bath **A** over Bunsen burner	**4**

Question	Answer	Guidance	Mark
1(c)(ii)	use same mass / weight / volume of fruit sample ; use same volume / concentration of Benedict's (reagent) ; at same temperature ; **EITHER** left for same time period ; **OR** time for colour to change measured / compared ; **EITHER** colour change to yellow / orange / red indicates more reducing sugar / green less ; **OR** faster colour change indicates more reducing sugar **ORA** ;		**4**
		Total:	**21**

Question	Answer	Guidance	Mark
2(a)(i)	(large piece) 26 – 28 ; (smaller pieces) 34 – 36 ;	units not required (mm) as given in Table 2.1 **A** answers in cm provided correct units given	**2**
2(a)(ii)	raw potato produces more oxygen / gas (than boiled potato) ; boiled potato – (enzyme / catalase) inactive / destroyed / denatured ; more oxygen / gas / bubbles released from smaller pieces of raw potato **ORA** ; small pieces – greater surface area / more enzyme exposed / **AW** / **ORA** ;		**4**

Question	Answer	Guidance	Mark
2(b)	repeat tests **+** calculate mean / average / identify anomalies **;** same mass / weight / volume of potato for each experiment **;** same volume / concentration of solution (hydrogen peroxide) **;** same potato / same species / same type **;** same temperature **;** use different apparatus e.g. gas syringe / graduated tube to collect gas volume / measure gas volume **AW ;** consistent level of agitation (of test-tube) **;**		**4**
		Total:	**10**

Question	Answer	Guidance	Mark
3(a)(i)	neatly drawn table with all lines ruled ; 2 columns / rows headed 'student 1' and 'student 2' ; one header across both columns / rows: measurement / distance / length / height + cm ;		3
3(a)(ii)	12 ;		1
3(a)(iii)	anomalous result / outlier / doesn't fit trend / **AW** ;		1
3(a)(iv)	lack of concentration / distraction / **AW** ;	**A** student not ready / ruler upside down / hand not at zero	1
3(a)(v)	axes labelled 'student 1' and 'student 2' central to columns / rows + mean distance / mean results + cm ; linear scale on distance axis + 0 on y-axis + use of at least half of grid in both directions ; correct plots + ruled lines + both bars of equal width ;		3
		Total:	9
		Paper Total:	40