

## **Cambridge International Examinations**

Cambridge International Advanced Subsidiary and Advanced Level

BIOLOGY 9700/33

Paper 3 (Advanced Practical Skills 1)

May/June 2016

MARK SCHEME

Maximum Mark: 40

## **Published**

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## Mark scheme abbreviations:

; separates marking points

I alternative answers for the same point

R reject

A accept (for answers correctly cued by the question, or by extra guidance)

**AW** alternative wording (where responses vary more than usual)

<u>underline</u> actual word given must be used by candidate (grammatical variants accepted)

max indicates the maximum number of marks that can be given

**ora** or reverse argument

**mp** marking point (with relevant number)

ecf error carried forward

I ignore

age 3	Mark Scheme	Syllabus	Paper
-g	Cambridge International AS/A Level – May/June 2016	9700	33
(a) (i)	(risk assessment) (hydrogen peroxide) harmful <b>or</b> irritant <b>+</b> medium <b>or</b> high ;		[1]
(b) (i)	(measures room temperature) whole number <b>or</b> to half a degree <b>+</b> °C;		[1]
(ii)	(decides on interval for temperature) at least three additional temperatures + whole numbers + even inter°C;	vals ;	[2]
(iii)	<ul> <li>(recording results)</li> <li>1. table drawn + heading, temperature + °C;</li> <li>2. heading, time + seconds;</li> <li>3. records results for at least five temperatures;</li> <li>4. correct pattern of results;</li> <li>5. times recorded as whole seconds;</li> <li>6. records results for reports + means calculated;</li> </ul>		[6]
(iv)	appropriate error with reason; e.g. concentration of hydrogen peroxide decreases appropriate error with reason;		[6]
(v)	e.g. different volumes of extract on each square of filter paper (conclusions)		[2]
	(as temperature increases, activity increases) more successful collismore enzyme-substrate-complexes/ESCs; (decreased/no activity) denatures <b>or</b> changed shape of active site;		[2]
(vi)	<ul> <li>(modification to investigate another variable)</li> <li>1. (to standardise temperature) stated temperature + thermostatical controlled water-bath;</li> <li>2. (independent variable) at least five concentrations of catalase;</li> <li>3. (method) simple dilution/proportional dilution/serial dilution;</li> </ul>	ly	[3]
(c) (ch 1. 2.	( $x$ -axis) different plant species + ( $y$ -axis) initial rate of activity of cata $s^{-1}$ ; (scale on $x$ -axis) even width of bars + (scale on $y$ -axis) 0.05 to 2 cm, at least each 2 cm; correct plotting of five bars;	labelled	
4.	five bars labelled with each horizontal line drawn as a thin line + each column labelled;	cn	[4]
			[Total: 21]

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2 (a) (i	<ul> <li>(plan diagram)</li> <li>1. plan diagram of appropriate size + no shading;</li> <li>2. no cells + at least two vascular bundles + correct section drawn</li> <li>3. epidermis drawn as two lines drawn closely together;</li> <li>4. line drawn to show area of cells located at tip of leaf;</li> </ul>	;	[4
(ii	<ol> <li>(drawing)</li> <li>quality of line for outer wall of cells + size at least 50 mm across cell;</li> <li>only four cells drawn, each cell touching at least one other cell;</li> <li>cell walls drawn as two lines close together;</li> <li>one cell which shows a difference from other cells;</li> <li>e.g. cell contains an inclusion</li> <li>uses one label line + one label to cell wall;</li> </ol>	largest	[5
(b) (i	<ul> <li>(ratio)</li> <li>1. measures depth of midrib + diameter of the vascular bundle;</li> <li>2. records whole numbers or to 0.5 for both measurements;</li> <li>3. decides to use same units for both measurements;</li> <li>4. displays, in final ratio, larger number to smaller number;</li> <li>5. final answer as simplest ratio;</li> </ul>		[5
(ii)	(conclusion) (habitat) water + (feature) large air spaces or more air spaces or A	VP;	[1

(c) (observable difference between leaf on K1 and leaf in Fig. 2.2) organises comparisons into three columns with one column for features, one headed K1 and one headed Fig. 2.2; any three observable differences of comparison;;;

e.g. K1 has more vascular bundles than Fig. 2.2

[Total: 19]

[4]