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Cambridge International Advanced Subsidiary and Advanced Level

MARK SCHEME for the October/November 2015 series

9700 BIOLOGY

9700/33 Paper 3 (Advanced Practical Skills 1), maximum raw mark 40

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Mark scheme abbreviations:

;	separates marking points
/	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)
underline	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

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1 (a) (i) medium or high **;** [1]

(b) (i) at least 3 percentage concentrations of **S** + **SY** **;**
volumes for 3 percentage concentrations of **S** + **SY** **;**
volumes for 3 percentages making 10 cm^3 **;** [3]

(ii) mp1 table drawn + heading for percentage concentration + **SY** **;**

mp2 heading for temperature + ºC **;**

mp3 records results for initial temperatures + final temperatures **;**

mp4 records temperatures to the correct accuracy **;**

mp5 result for 0% **SY** recorded first **;**

mp6 processes results recorded in table **;** [6]

(iii) *ref. to* control **;** [1]

(iv) half the value of the smallest division stated multiplied by 2 **;** [1]

(v) *ref. to* loss of heat to surroundings **;** [1]

(vi) uses 0% **S** or other stated concentration of **S** **;**
uses at least 5 concentrations of hydrogen peroxide **;**
concentrations of hydrogen peroxide prepared by simple or serial dilution **;** [3]

(c) (i) mp1 (*x*-axis) percentage concentration of copper sulfate
+(*y*-axis) rate of catalase activity / number of bubbles released per minute **;**

mp2 (*x*-axis) 2 cm to 0.05, labelled each 2 cm, except origin and 0.3
+(*y*-axis) 2 cm to 10, labelled each 2 cm, except origin and 40 **;**

mp3 correct plotting of 5 points as small cross or dot in circle **;**

mp4 5 plots + ruled sharp lines exactly point to point **;** [4]

(ii) *ref. to* inhibition **;**
fewer enzyme-substrate complexes **;** [2]

[Total: 22]

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2 (a) (i) mp1 draws correct proportion of vascular bundle + no shading ;

mp2 no cells + vascular bundle subdivided into at least 2 layers of tissue ;

mp3 draws correct shape of vascular bundle ;

mp4 correct proportion of xylem tissue compared to other tissues in the vascular bundle ;

mp5 uses label line + label to xylem ; [5]

(ii) mp1 at least 4 cells + size at least 40 mm across largest cell + sharp continuous lines ;

mp2 only 4 cells drawn + 2 cells touching + at least one of these cells touching one other cell ;

mp3 cell walls drawn as double lines + middle lamella between ;

mp4 correct proportion of width of cell wall to cell ;

mp5 uses label line + label to cell wall ; [5]

(b) (i) correct measurement of line **A** (40–42 mm) ;
shows multiplication by 1000 + division by 125 ; [2]

(ii) shows ratio as larger whole number to smaller whole number to lowest common denominator ; [1]

(iii) water habitat + air spaces ; [1]

(c) organised as table with 3 columns or rows headed for feature + **K1** + Fig. 2.1 ;
3 observable differences between **K1** and Fig. 2. 1 ;;; [4]

[Total: 18]

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