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Cambridge International Advanced Subsidiary and Advanced Level

MARK SCHEME for the October/November 2015 series

9700 BIOLOGY

9700/36 Paper 3 (Advanced Practical Skills 2), 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) at least 2 cells **+** size at least 70 mm **+** sharp continuous lines **;**
2 cells drawn **+** no shading **;**
uses label line **+** label to cell wall **;** [3]

(ii) only one cell drawn **+** cell wall drawn as double lines **;**
draws membrane **+** nucleus **;**
uses label line **+** label to feature (membrane, nucleus, cytoplasm) **+** stained **;** [3]

(b) (i) (×)10 **or** (×)40 **;** [1]

(ii) (for ×10) 10 or more cells / (for ×40) 10 cells or less **;** [1]

(iii) shows number of plasmolysed cells divided by total number of cells counted multiplied by 100 **;** [1]

(iv) mp1 table drawn **+** heading for cells **;**

mp2 heading for plasmolysis **;**

mp3 records ✓or ✕ (for each cell) **;**

mp4 replicates **;**

mp5 processes results recorded in table **;** [5]

(v) *ref. to* difficulty of judging degree of plasmolysis for each cell **;** [1]

(vi) correct *ref. to* movement of water into the cells **;**
by osmosis **;**
ref. to higher water potential outside cell **;** [3]

(vii) uses at least 5 concentrations of sodium chloride solution **;**
concentrations of sodium chloride solution prepared by simple or serial dilution **;**
ref. to comparing plasmolysis of unknown solution with plasmolysis of known concentrations **;** [3]

[Total: 21]

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2 (a) (i) shows squares on grid included in surface area ;
does not include squares less than half a square ;
total number of squares within range ;
answer shows cm^2 ; [4]

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

(b) (i) mp1 (*x*-axis) number of leaves **+** (*y*-axis) transpiration rate / μl per minute ;

mp2 (*x*-axis) 2 cm to 2, labelled each 2 cm, except origin and 14
+ (*y*-axis) 2 cm to 2, labelled each 2 cm, except origin and 10 ;

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

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

(ii) shows on graph where reading taken for 12 leaves ;
correct reading **+** μl per minute ; [2]

(c) mp1 size at least 90 mm **+** no shading ;

mp2 no cells **+** at least 4 lines **+** one enclosed area **+** correct section drawn ;

mp3 shows subdivision of vascular bundle ;

mp4 correct position of vascular bundle within bulge ;

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

(d) organised as table with 3 columns or rows headed for feature **+** Fig. 2.2 **+** Fig. 2.3 ;
2 observable differences between Fig. 2.2 and Fig. 2.3 ; [3]

[Total: 19]

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