MARK SCHEME for the October/November 2015 series

9700 BIOLOGY

9700/36   Paper 3 (Advanced Practical Skills 2), maximum raw mark 40

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 2015 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

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)
<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

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]

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]