

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

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                                      |
| <b>R</b>                | reject  |
| <b>A</b>                | accept (for answers correctly cued by the question, or by extra guidance)   |
| <b>AW</b>               | alternative wording (where responses vary more than usual)                  |
| <b><u>underline</u></b> | actual word given must be used by candidate (grammatical variants accepted) |
| <b>max</b>              | indicates the maximum number of marks that can be given                     |
| <b>ora</b>              | or reverse argument   |
| <b>mp</b>               | marking point (with relevant number)  |
| <b>ecf</b>              | error carried forward   |
| <b>I</b>                | 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  $\text{cm}^2$  ; [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 /  $\mu\text{l}$  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 +  $\mu\text{l}$  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]**