

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge International Advanced Subsidiary and Advanced Level

**MARK SCHEME for the October/November 2015 series****9700 BIOLOGY****9700/35**

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
<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) medium or high ; [1]
- (b) (i) stated volume (2 or 3 or 4 or 5 cm<sup>3</sup>) + use a syringe + same volume for each pH solution ; [1]
- (ii) mp1 table drawn + heading for solution(s) ;  
 mp2 heading for colour ;  
 mp3 records a colour for all 6 solutions (**pH3**, **pH4**, **pH6**, **W**, **S1** and **S2**) ;  
 mp4 records **pH6** as a paler colour (pink, red or purple) than **pH3** ;  
 mp5 records a darker or brighter colour (pink, red or purple) for **S2** than for **pH3** or red for **S2** if **pH3** is pink ; [5]
- (iii) correct position of **pH3**, **pH4** and **pH6** on the scale ;  
**W**, **S1** and **S2** in correct positions on scale ; [2]
- (c) (i) mp1 (x-axis) temperature (/) °C + (y-axis) absorbance (of) light (by) coloured liquid (/) arbitrary units or au ;  
 mp2 (x-axis) 5 to 2 cm labelled each 2 cm origin labelled 20 or 25 + (scale for y-axis) 0.1 to 2 cm labelled each 2 cm ;  
 mp3 correct plotting of 5 points as a small cross or dot in circle ;  
 mp4 5 plots + ruled sharp lines exactly point to point ; [4]
- (ii) shows on graph where reading taken off at 40 °C ;  
 correct reading from graph + arbitrary units or au ; [2]
- (iii) as the temperature increases the permeability of the cell surface membranes increases ;  
 cell membrane contains) protein ;  
 high temperature denatures protein ; [3]
- (iv) thermostatically controlled water-bath ; [1]
- (iv) 5 or more concentrations of alcohol or examples of 5 concentrations ;  
 serial dilution or simple dilution or described ; [2]

[Total: 21]

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- 2 (a) (i) mp1 size at least 90 mm + no shading ;
- mp2 no cells + at least 3 lines + at least 3 enclosed areas drawn (denoting vascular bundles) + only half drawn ;
- mp3 draws outline with either 1 bulge or 2 half bulges ;
- mp4 at least 2 lines for epidermis (small space between these lines) ;
- mp5 uses label line + label to xylem ; [5]
- (iii) pith cells larger **or** pith cells have intercellular spaces **or** pith cells more loosely packed **or** pith cell wall thinner **or** pith cells rounder **ora** ; [1]
- (iii) mp1 at least 4 cells + size at least 40 mm across largest cell + sharp continuous lines ;
- mp2 only 4 cells drawn + each cell must touch at least one point on 2 other cells + no shading ;
- mp3 minimum of one intercellular space between cells ;
- mp4 cell walls drawn as double lines + middle lamella between ;
- mp5 uses label line + label to cell wall ; [5]
- (b) (i) correct measurement of line **A** (19–21 mm) ;  
shows division by 100 ;  
shows multiplication by 1000 or  $10^3$  ; [3]
- (ii) organised as table with 3 columns or rows headed for feature + **K1** +  
Fig. 2.1 ;  
3 observable differences between Fig.2.1 and Fig. 2. 2 ;;; [4]
- (iii) correct ratio as a larger whole number to a smaller whole number to the lowest common denominator ; [1]
- [Total: 18]**