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

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.

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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

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

(b) **(i)** stated volume (2 or 3 or 4 or 5 cm^3) **+** 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]

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]