CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the May/June 2014 series

9700 BIOLOGY

9700/35 Paper 35 (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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2014 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary 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)
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) (middle of winter) blue-black **+** (beginning of spring) lighter blue-black **+** (middle of spring) orange / red / brown **;**
all three correct for one mark [1]

(ii) iodine (solution) **;**
(of iodine) same volume / same number of drops / stated number of drops
+ (of starch) same volume / same number of drops / stated number of drops **;** [2]

(iii) organised into table all columns separated by a line **+** all headings underlined **;**
records colours for at least 3 solutions **;**
records correct colour for **S2** (most blue / black) **+ S3** (orange / yellow) **;** [3]

(iv) **S2** (middle of winter) **+ S1** (beginning of spring) **+ S3** (middle of spring) **;** [1]

(v) headings (top or to left of data) samples **+** (any column / row headed) time (/) seconds **;**
(record results as) whole seconds (less than 300) **;**
(shows correct pattern) **G1** longest time **+ S3** shortest time **;** [3]

(vi) greater than 1% **;** [1]

(vii) **mp1** more glucose concentrations above 1% **;**
mp2 two named examples of concentrations above 1% **;**
mp3 repeat experiment at least twice **;**

mp4 thermostatically controlled water-bath for the Benedict's test
or
use graduated pipette or burette or syringe with smaller divisions **;**

mp5 video camera / play back (of appearance of first colour)
or
perform each test separately or stagger start or use help **;** [max 3]
max 1 for mp3, mp4 and mp5

(viii) syringe or thermometer **+** no effect **+** same syringe / thermometer used
or
syringe or thermometer **+** affects accuracy **+** not true value **;** [max 1]

(b) (i) *x*-axis: *x*-axis time in storage / days **+** *y*-axis: mean percentage change in water content **;**

scale *x*-axis 5 to 2 cm, labelled each 2 cm, except origin and 25 **+** *y*-axis 5 to 2 cm, labelled each 2 cm, except origin and 20 **;**

correct plotting of five points as small cross or dot in circle **;**

five plots **+** ruled sharp lines exactly point to point or sharp smooth line **;** [4]

(ii) (20 day sample has highest percentage gain in mass) so water potential lowest in cells (in roots stored for 20 days) **;**
steeper water potential gradient **+** more water molecules diffuse or more water molecules move by osmosis **+** into carrot cells **;** [2]

[Total: 21]

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2 **(a)** at least 4 enclosed areas in total + size at least 70 mm across largest vessel **+** no shading **;**
no cells + only 2 complete vessels **;**
at least one vessel with wall with at least two layers **;**
one vessel drawn with thicker wall than other vessel **;**
uses label line and label to inner (endothelium) layer in vessel with thicker wall and narrower lumen + statement that is folded ora
or
two label lines, each annotated, folded for artery and not folded for vein **;** [max 5]

(b) at least 5 cells + size at least 30 mm across largest cell at widest point + sharp and continuous lines **;**
only 5 whole cells drawn **;**
nuclei occupy most of the cytoplasm in at least 3 whole cells **;**
at least 3 nuclei in whole cells drawn as different shapes **;**
labels to nucleus + cytoplasm + membrane in one cell only **;** [5]

(c) **(i)** larger number of white blood cells in Fig. 2.1 **;**
idea of produced by uncontrolled / abnormal division / production **;** [2]

(ii) five measurements within range (12 mm – 18 mm) + mm + to 0.5 **;**
shows addition of measurements (e.g. plus sign) + shows division by number of measurements **;**
shows division by 500 **;**
shows conversion of mm to μm (×1000) **;** [4]

(d) **mp1** organise as table with 3 columns headed features **+** Fig. 2.2 **+** Fig. 2.3 **;**

mp	feature	Fig. 2.2	Fig. 2.3
2	nucleus	absent	present **;**
3	shape of cell	round / irregular	oval **;**
4	number of cells	more	few(er) **;**
5	size of cells	small(er)	big(ger) **;**

[max 3]

[Total: 19]

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