CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level

MARK SCHEME for the May/June 2014 series

9700 BIOLOGY

9700/34 Paper 34 (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.

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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

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1 (a) (i) idea of increase ; [1]

(ii) stated volume or same volume of sample or starch **+** syringe ; [1]

(iii) two levels drawn and labelled with 'before' ;
+ 'after' **+** water level after lower than before ;

lowest level still covers contents of Visking tubing ; [2]

(iv) stated volume or same volume of sample or starch **+** syringe ; [1]

(v) all columns separated by a line **+** all headings underlined ;

(top or left of data) time (/) min(utes) ;
+ (any column / row headed) vol(ume) of iodine or I cm^3 or ml(s) ;

records results at four times (0, 5, 10, 15) ;

records a value for 5 minutes that is lower than the rest ;

all values to one decimal place ; [5]

(vi) check results against answer to **(a)(i)** *must show agreement* ; [1]

(vii) idea of serial dilution or simple dilution (of 1%) ;

use graph to find % concentration ; [2]

(viii) syringe or stopwatch **+** no effect **+** if use same syringe or stopwatch
or
idea of different syringe used **+** systematic error **+** not true value ; [max 1]

(b) (i) (*x*–axis) vol(ume) of iodine (/) cm^3
+ (*y*–axis) percent(age) or % of starch reacted (with iodine solution) ;

(*x*–axis) 0.5 to 2 cm labelled each 2 cm except origin and 3.0 / 3.5
+ (*y*–axis) 20 to 2 cm labelled each 2 cm except origin and 100 ;

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

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

(ii) correct estimation from graph by shown extrapolation ; [1]

(iii) idea of too much ascorbic acid then iodine may not stain
or
idea of having to add more iodine in order to observe colour ;

need to know how much ascorbic acid in plant tissues to make test accurate ; [max 2]

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(iv) use 3 cm^3 or more of iodine or more iodine, or excess iodine
or
the volume given in **(b)(ii)** or more **;** [max 1]

[Total: 22]

2 (a) (i) at least 3 enclosed areas **+** size 40 mm across largest enclosed area at widest point **+** sharp continuous line **+** no shading **;**

only three complete enclosed areas
+ each enclosed area touching at least one other enclosed area **;**

nucleus drawn **+** membrane no more than twice the width of the nucleus **;**

uses label line **+** label to only one nucleus **;** [4]

(ii) correct label line to the surface of the alveoli **;** [1]

(iii) air space / large surface area / wall one cell thick / thin alveolar wall **;**

diffusion or idea of more efficient gas exchange **;** [2]

(b) (i) **Z** to closed guard cells **;**

idea of stomata / guard cell / air space(s) **+** closed
+ reduces diffusion of water or reduces evaporation **;** [2]

(ii) at least whole 5 cells **+** size of the largest cell at its largest dimension at least 50 mm
+ no ruled lines **+** no shading **;**

draws only whole cells within the boundary **+** at least five cells **;**

length of stomatal gap is the same or shorter than the length of the guard cell on the right **;**

shows inclusions in the three largest cells **;**

correctly labelled with label line to only one guard cell **;** [5]

(iii) measures scale bar to 22 **+** mm **+** to within 1 mm **;**

(A) shows conversion of scale bar in mm to μm (× 1000)
or
(B) shows conversion of 54 μm to mm (54 divided by 1000 = 0.054 mm) **;**

(A) show measurement of scale bar in μm divided by 54 μm
or
(B) shows measurement of scale bar in mm divided by 0.054 mm;

(A) and **(B)** rounds answer to a whole number**;**

[4]

[Total: 18]

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