

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge International Advanced Subsidiary and Advanced Level

## **MARK SCHEME for the October/November 2014 series**

### **9700 BIOLOGY**

**9700/34**

Paper 3 (Advanced Practical Skills 2), maximum raw mark 40

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Mark scheme abbreviations:

|                         |   |
|-------------------------|---|
| <b>;</b>                | separates marking points  |
| <b>/</b>                | 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) organised into table with all columns separated by a line  
+ all headings underlined ;  
headings (top or to left of data) sample + (any column/row headed) scale ;  
result for **P1** is a lower number than **P2** ;  
result for **W** is 0 ; [4]
- (ii) **U** is less concentrated than **P1** and **P2** + **U** is less than 0.8% ; [1]
- (iii) **P1** ;  
**U** lower scale number than **P1** ; [2]
- (iv) at least four further concentrations of **E** + % ;  
shows transfer of 10 of **P** from previous beaker to three beakers +  $\text{cm}^3$  ;  
adds 10 of water to three beakers +  $\text{cm}^3$  ; [3]
- (v) records colours + numbers for at least three concentrations ;  
records correct trend for concentrations ; [2]
- (vi) correct estimate of **U** ; [1]
- (vii) colorimeter ; [1]
- (b) (i) 1 (x-axis) albumin concentration + g per  $100\text{cm}^3$   
(y-axis) frequency + number of people ;  
2 (x-axis) bars of equal width  
(y axis) 2 cm to 10 number of people labelled each 2 cm except origin and 60 ;  
3 correct plotting of bars in order of the table ;  
4 six bars + ruled sharp vertical and horizontal lines ; [4]
- (ii) people with different health or sex or age or metabolism ; [1]
- (iii) albumin slows blood circulation or causes osmotic or kidney problems ; [1]

[Total 20]

|        |  |          |       |
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- 2 (a) (i) 1 at least three lines + size at least 40 mm at widest point + no shading ;
- 2 no cells drawn + one curved end ;
- 3 epidermis drawn as two lines ;
- 4 at least two vascular bundles drawn ;
- 5 label + line to palisade layer ; [5]
- (ii) 1 at least four whole cells + largest epidermal cell at least 40 mm at widest point + sharp continuous outer lines ;
- 2 at least one epidermal cell + at least three cells for trichome ;
- 3 cell walls as double line with middle lamella between ;
- 4 line to nucleus ; [4]
- (b) (i) 1 organise as a table with 3 columns + two columns headed **L1** and **L2** + one column with at least one feature ;

|   | (feature)                      | L1   | Fig 2.2  |
|---|--------------------------------|--|--|
| 2 | trichome                       | has trichomes on both surfaces                     | trichomes on one surface ;                         |
| 3 | folds                          | no folds / absent / no / (only) 1–3 / less / fewer | has fold / present / yes ;                         |
| 4 | vascular bundles number        | less / few(er)                                     | more / many ;                                      |
| 5 | vascular bundles position      | not in folds / only in midrib                      | one in each fold ;                                 |
| 6 | xylem                          | small(er)  | large(r) ;   |
| 7 | air spaces or packing of cells | large / many / present or cells loosely packed     | smaller / fewer / absent or cells densely packed ; |
| 8 | cuticle                        | thick(er) / thin(ner)                              | thick(er) / thin(ner) ;                            |

[max 4]

- (ii) 1 measure scale bar + line + units ;
- 2 566 divided by measurement of scale bar or length of line divided by length of scale bar or length of scale bar divided by 566 ;
- 3 measurement of line multiplied by answer to mp2 or answer to mp2 multiplied by 566 or length of line divided by answer to mp2 ;
- 4 rounds answer to no more than correct decimal places ; [4]

|               |   |                 |              |
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- (iii) measures at least 5 folds ;  
converts to actual length ; [2]
- (iv) folded leaf retains humidity or cuticle prevents transpiration ; [1]

**[Total: 20]**