

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge International Advanced Subsidiary and Advanced Level

**MARK SCHEME for the May/June 2015 series****9700 BIOLOGY****9700/33**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.

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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

Page 3	Mark Scheme	Syllabus	Paper
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- 1 (a) (i) starch test + iodine solution ; [1]
- (ii) reducing sugar test + add Benedict's solution + heat (80 °C – 100 °C) ; [1]
- (iii) table with heading + solutions + (any column/row headed) + observations ;  
records results for reducing sugar test and starch test for **S1**, **S2** and **S3** ;  
for starch test on **S3** records colour change to blue-black  
+ for reducing sugar test on **S2** records colour change from blue to  
yellow, green, red ; [3]
- (iv) completed table identifying mixture of sucrose and glucose as **S2**  
+ sodium chloride as **S1** + starch as **S3** ; [1]
- (v) (level of risk) medium or high ; [1]
- (b) (i) completed sentence, inserting leaves + plasmolysed ; [1]
- (ii) table with heading + solutions + (any column/row headed) + number + cells ;  
records repeats ;  
for **W** records number as 0 or 1 + for **S1** records number as 6 or above ; [3]
- (iii) *idea of difficulty* judging which cells are plasmolysed ; [1]
- (iv) 1 thin and continuous lines + size at least 70 mm for at least one cell ;  
2 draws one cell for **W** and one cell for **S1** + cell walls drawn as double  
lines ;  
3 for **S1**, draws cell membrane coming away from cell wall ;  
4 correct label with label line to cytoplasm for **W** and **S1** ; [4]
- (v) for **S1** or **S3**, osmosis + correct direction of water movement ;  
for **S1**, water moving out of cell + correct reference to water potential ;  
for **S3**, *idea of* no net movement of water **or** correct ref. to water potential ; [3]

[Total: 19]

Page 4	Mark Scheme	Syllabus	Paper
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- 2 (a) (i) using syringe to fill **or** empty tubes to lines marked on tube ; [1]
- (ii) 1 table with heading + tubes + (any column/row headed) + volume +  $\text{cm}^3$  ;  
 2 for 4 tubes, volumes for  $V_0$  and volumes for  $V_9$  ;  
 3 records number as whole numbers **or** to correct precision ;  
 4 for processed results ( $V_0 - V_9$ ), correct calculation of volume of water evaporated ; [4]
- (iii) completed table according to candidate's results ; [1]
- (iv) using lid without holes **or** no lid ; [1]
- (v) increase temperature + thermostatically-controlled water-bath  
**or**  
 increase wind speed + fan  
**or**  
 lower humidity + fan **or** use of named water absorber ; ; [2]
- (b) *orientation*  
 (x-axis) total circumference of holes ( $l$ ) mm + (y-axis) rate of evaporation of water ( $l$ )  $\text{cm}^3 \text{ day}^{-1}$  ;
- scale*  
 (x-axis) 2 cm to 5 labelled each 2 cm + (y-axis) 2 cm to 0.2 labelled each 2 cm ;
- plotting*  
 correct plotting of 5 points as small cross **or** dot in circle to  $\pm$  half a square ;
- line*  
 5 plots with ruled lines as line of best fit **or** exactly point to point  
 + quality smooth line less than 1 mm thick ; [4]
- (c) 1 draws at least 3 layers of tissue + size at least 70 mm + no shading ;  
 2 no cells drawn + correct quarter drawn ;  
 3 draws at least 4 layers of tissue ;  
 4 vascular bundle drawn to correct proportions ; [4]
- (d) (i) shows 0.024 multiplied by 1000 ;  
 shows answer as  $24 \mu\text{m}$  ; [2]
- (ii) shows length of Y as eyepiece graticule divisions within range ;  
 shows length of Y multiplied by  $24 + \mu\text{m}$  ; [2]

[Total: 21]