

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge International Advanced Subsidiary and Advanced Level

**MARK SCHEME for the October/November 2015 series****9700 BIOLOGY****9700/34**

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

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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:

<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) low ; [1]
- (b) (i) shows at least 2 more sizes cut using previous size ; [1]
- (ii) (dimension)  $5 \times 5 \times 20$  (surface area) 450 ;  
 dimension)  $5 \times 5 \times 10$  (surface area) 250 + (dimension)  $5 \times 5 \times 5$  (surface area) 150 ; [2]
- (iii) use syringe to measure same volume for all test-tubes **or** mark the level on first test-tube and then use this to mark other test-tubes ; [1]
- (iv) mp1 table drawn + heading for surface area + mm<sup>2</sup> ;  
 mp2 heading for number ;  
 mp3 records values for at least 4 different size pieces ;  
 mp4 records results as whole numbers ;  
 mp5 records the highest surface area as having the highest intensity ;  
 mp6 repeats ; [6]
- (v) random ;  
 correct error described e.g. ends not vertical or *idea of problems* cutting the potato to the correct dimensions ; [2]
- (vi) diffusion ; [1]
- (vii) (standardise surface area) same size / measurements ;  
 (change temperature) 5 temperatures or examples of temperatures ;  
 use a thermostatically controlled water-bath ; [3]
- [Total: 17]**

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- 2 (a) (i) at least 6 starch grains + size at least 30 mm across the largest starch grain  
+ sharp continuous lines ;  
draws only 6 whole starch grains + no shading ;  
correct shape ;  
shows different sizes ;  
shows correct pattern of lines inside at least 3 starch grains ; [5]
- (ii) L ; [1]
- (iii) *idea of patterns* not visible as iodine stains the starch grains blue/black ; [1]
- (b) (i) circled **only** 16.525 ; [1]
- (ii) correct mean 16.250 ; [1]
- (iii) mp1 (x-axis) type of maize + (y-axis) mean size of starch grains (/)  $\mu\text{m}$  ;  
mp2 (x-axis) even bar widths + equal spaces between bars  
+ (y-axis) 0.5 to 2 cm labelled each 2 cm with origin at 16 ;  
mp3 correct plotting of each bar in order in table + with horizontal line ruled  
within half a square ;  
mp4 clear sharp lines + labelling of bars **D, E, F, G** and **H** ; [4]
- (iv) genetic **or** DNA **or** different enzymes **or** age **or** sample size too small to  
show a valid difference ; [1]
- (c) (i) shows 0.023 multiplied by 1000 or  $10^3$  ;  
 $23\mu\text{m}$  ; [2]
- (ii) correct number of eyepiece graticule units ;  
shows eyepiece graticule units multiplied by the answer to (c)(i) ; [2]
- (d) mp 1 size at least 90 mm + no shading ;  
mp 2 no cells + at least 4 lines + one enclosed area drawn + correct section  
drawn ;  
mp 3 draws vascular bundle inside bulge ;  
mp 4 draws vascular bundle with central enclosed area within an outer enclosed  
area ;  
mp 5 correct label with label line to the vascular bundle ; [5]

[Total: 23]