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Cambridge International Advanced Subsidiary and Advanced Level

MARK SCHEME for the May/June 2015 series

9700 BIOLOGY

9700/32 Paper 3 (Advanced Practical Skills 2), maximum raw mark 40

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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) starch test **+** iodine solution ; [1]

(ii) completed table with tick for **D1 +** cross for each of **D2**, **D3**, **D4** ; [1]

(iii) (reducing sugar test) add Benedict's **+** heat (80 °C - 100 °C) ;

(non-reducing sugar test) add acid **+** heat ;

(non-reducing sugar test) neutralise ; [3]

(iv) (level of risk) medium or high ; [1]

(v) **1** table with heading **+** drinks ;

2 table with heading **+** time **+** seconds ;

3 records results for 4 reducing sugar tests **+** 4 non-reducing sugar tests ;

4 for **D2** records time for reducing sugar test as longer than for non-reducing sugar test ;

5 records time in whole seconds ; [5]

(vi) **D1** or **D2** (breaks down to glucose) or **D3** shortest time to show colour change ; [1]

(vii) at least 5 known glucose concentrations ;

made by simple or serial dilution ;

carry out Benedict's test with known glucose concentrations and **D5 +** compare result for **D5** with results for known glucose concentrations ; [3]

(b) (i) *orientation*
(*x*-axis) $\log_{10}$ distance (/) m **+** (*y*-axis) average speed (/) m s^{-1} ;

scale
(*x*-axis) 2 cm to 0.5 labelled each 2 cm **+** must have 2 at the origin **+** (*y*-axis) 2 cm to 1 labelled each 2 cm **+** must have 5 at origin ;

plotting
correct plotting of 5 points as small cross or dot in circle ± half a square ;

line
5 plots with ruled lines exactly point to point **+** quality smooth line less than 1 mm thick ; [4]

(ii) correct estimate from candidate's graph ; [1]

(iii) as distance increases the average speed decreases ; [1]

(iv) increased number of red blood cells ; [1]

[Total: 22]

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2 (a) (i) draws at least 2 layers of tissue **+** size at least 70 mm **+** no shading ;

no cells drawn **+** correct quarter drawn ;

epidermis drawn as 2 lines close together ;

draws at least one vascular bundle subdivided into tissue layers ;

correct label with label line to vascular bundle ; [5]

(ii) thin and continuous lines **+** size at least 40 mm for at least one cell ;

draws only 4 whole cells **+** each cell touching at least 2 other cells ;

intercellular space present for 4 cells;

cell walls drawn as double lines ;

correct label with label line to cell wall ; [5]

(b) organizes table with 3 columns or rows **+** with appropriate headings **+** one column or row for features ;

records only differences ;

at least one observable difference for the vascular tissue ;

at least one observable difference for one other tissue ; [4]

(c) (i) shows measurement of line **Y** within range **+** mm ;

shows length of **Y** divided by 250 **+** multiplied by 1000 ; [2]

(ii) lumen / space / no (cell) contents **+** transport / *idea of* less resistance [1]
or
wall **+** support to prevent collapse ;

(iii) shows the simplest ratio of the diameter of cell **Q** to the diameter of cell **R** ; [1]

[Total: 18]

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