

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International Advanced Subsidiary and Advanced Level

MARK SCHEME for the May/June 2015 series

9700 BIOLOGY

9700/31

Paper 3 (Advanced Practical Skills 1),
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) |
| <u>underline</u> | 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) (heading) solution(s) **or** sample + (heading) observation(s) **or** colour (with iodine) ;
- (S) blue-black/black + (S and E) any acceptable colour (orange/brown/yellow) ;
- repeats the experiment ; [3]
- (ii) records time as a whole number only + seconds / s / sec(s) ; [1]
- (iii) ref. to hydrolysis / digestion of starch ; [1]
- (iv) glucose / maltose ; [1]
- (v) (level of risk) medium or high ; [1]
- (b) (i) (labels under correct sequence of beakers) 0.5 + 0.25 + 0.125 + 0.0625 + % ;
- shows transfer of 10 cm³ of solution from previous beaker to 3 beakers ;
- adds 10 cm³ water / **W** to 4 beakers ; [3]
- (ii) 1 (heading) percentage concentration of starch solution ;
- 2 (heading for any column/row) time + s / second(s) / sec(s) ;
- 3 records at least 5 results for 5 different concentrations as whole numbers ;
- 4 records 1% as faster than lowest concentration ; [4]
- (iii) correct answer calculated from students results ; [1]
- (iv) reject ;
- colour change fastest at 1% ; [2]
- (c) (i) colour change / endpoint is difficult to judge ; [1]
- (ii) systematic error + same syringe **or** random error + appropriate problem ; [1]
- (iii) same concentration of starch ;
- at least 5 different concentrations of **X** or fruit juice + serial or simple dilution ;
- add Benedict's + heat to 80 °C / boil + record the time for first appearance of any colour change ; [3]

[Total : 22]

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- 2 (a) (i) 1 at least 3 lines + size at least 70 mm + no shading ;
- 2 no cells + correct quarter drawn ;
- 3 at least 5 lines drawn + one complete bulge ;
- 4 at least 3 layers + epidermis drawn as double lines **or** trichomes drawn ;
- 5 label T with label line ; [5]
- (ii) 1 quality of outer line sharp and continuous + largest cell size at least 40 mm in length + at least 4 cells ;
- 2 only 4 complete cells drawn + each cell must touch another cell at least at one point to form one group ;
- 3 correct proportion of cell wall to cytoplasm (thin cell walls) ;
- 4 labels one cell wall ; [4]
- (b) records correct number of eyepiece graticule units ;
- shows multiplication by 11 ;
- correct answer + units ; [3]
- (c) (i) *orientation*
(x-axis) biological molecule found in fruit + (y-axis) mass (of) biological molecule in the 35g fruit (/) g ;
- scale*
(x-axis) bars of equal width + equal distance apart) + using more than half the grid + (y-axis) even scale ;
- plotting*
correct plotting of each bar in the order in the table ;
- line*
sharp ruled lines + labels for **C, S, U, F, P** directly below bar or inside bar ; [4]
- (ii) shows addition of 0.2 and 0.4 + division by 35 + multiplication by 100 ;
- 1.7(%) ; [2]

[Total: 18]