CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the October/November 2013 series

9700 BIOLOGY

9700/36 (Advanced Practical Skills 2), 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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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Cambridge is publishing the mark schemes for the October/November 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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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 excepted)
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) **B** volume same as sample or **B** volume more than sample + temperature 80 °C to 100 °C; [1]

(ii) (labels under correct sequence of beakers)
(G2) 0.2%, + (G3) 0.1%, + (G4) 0.05%;
transfers 10 from second beaker to third, third to fourth + cm^3;
adds 10 cm^3 distilled water / **W** to each of three beakers; [3]

(iii) organised into table;
heading (column to left of data or top row) time (/) sec(onds) + (any column / row headed) percentage concentration of reducing sugar;
records results according to instructions i.e. for 0.4% and three other concentrations;
correct pattern of results: highest concentration shorter time than next concentration;
records all results as whole seconds; [5]

(iv) correct **E** has the shortest time;
correct % estimate for **E**; [2]

(v) use of iodine solution;
sampling at equal time intervals;
time until iodine remains same colour; [3]

(b) (i) label on *x*-axis <u>percentage of beads with iron sulfate</u> + label on *y*-axis <u>mass of (reducing sugar) produced / μ moles min^{-1}</u>;
(*x*-axis) 10 to 2 cm labelled each 2 cm + (*y*-axis) 20 to 2 cm labelled each 2 cm;
correct plotting of five points as small cross or dot in circle;
ruled lines through the 5 points; [4]

(ii) as % of beads with iron sulfate increases mass of reducing sugar decreases; [1]

(iii) iron sulfate inhibits reaction;
alters active site or binds to enzyme or fewer Enzyme-Substrate Complexes; [2]

[Total: 21]

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2 (a) drawing and quality;

do not give mark if
- any shading
- drawn over print of question
- any ruled lines
- smaller than 50 mm at widest point of wall
- less than 4 lines or 3 lines + 1 enclosed area

or if any part of line
- is too thick
- has any feathery or dashed lines or gap in line
- has any overlaps

no cells + only part of wall;
draws at least 6 lines or 5 lines + 1 enclosed area;
innermost layer thin + draws at least 6 lines or 5 lines + 1 enclosed area;
uses label line + labels lumen; [5]

(b) drawing and quality;

do not give mark if
- any shading
- drawn over print of question
- any ruled lines
- enclosed area smaller than 30 mm at widest point
- less than 4 enclosed areas

or if any part of line
- is too thick
- has any feathery or dashed lines or gap in line
- has any overlaps

at least 4 enclosed areas;
draws at least 4 nuclei;
draws at least 2 nuclei that are not circular or oval;
uses label line + labels nucleus; [5]

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(c) (i) correct measurement of **Y** (in mm 119 or 119.5 or 120 or 120.5 or 121 or cm 11.9(0) or 11.95 or 12(.0) or 12.05 or 12.1(0))
+ **Z** (in mm 16 or 16.5 or 17 or 17.5 or 18) or cm 1.6(0) or 1.65 or 1.7(0) or 1.75 or 1.8(0);
correct precision with mm or correct precision with cm;
shows ratio correctly; [3]

(ii) correct observable feature e.g. large lumen; [1]

(iii) mp1 organise as a table with three columns or rows separated by lines
+ two columns headings **N1** / slide and Fig 2.2 in any order
+ third column or row contains list of features;
mp2 includes at least one similarity;

mp	feature	N1 /slide	Fig. 2.2
mp3	lumen	present large	present large;
mp4	more than one tissue layer or thickness of wall or innermost layer	present or thick or thin	present or thick or thin;
mp5	(lumen) shape	rounded or 'C' 'U' shape or irregular or folded	oval or circular or regular or not folded;
mp6	cartilage / chondrocytes	present	absent;
mp7	ref. to layers e.g. number of layers e.g. air spaces	more 3 present	less 1 absent;
mp8	contents or valve or nucleus	nothing absent present	present present absent;
mp9	ref. to thickness of wall e.g. ratio of thickness of any wall to lumen e.g. outer wall (**Z**)	thinner or thicker	thicker or thinner;

[max 5]

[Total: 19]

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