CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the October/November 2013 series

9700 BIOLOGY

9700/35 (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.

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

Cambridge will not enter into discussions about these mark schemes.

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) (labels under correct sequence of beakers)
correct halving 3 + 1.5 + 0.75 with % once;
transfers 20 from second beaker to third, third to fourth etc. + cm^3;
adds 20 (distilled) water to each beaker + cm^3; [3]

(ii) organised into a table;
heading (column to left of data or top row) percentage or % concentration of hydrogen peroxide or **H** + (any column / row headed) height or length of foam + mm;
records results according to instructions i.e. 4 concentrations with highest concentration first and lowest concentration is last;
correct pattern of results, records a value for 6% which is higher than any one of the other results;
only recorded the processed maximum height + values to whole mm or 0.1 cm; [5]

(iii) cause of error + idea of error:

bubbles / foam at top + not same or difficult to judge or varies or different;
tube + changes as held or not vertical or not the same;
holding / hand + may warm up tube or temperature changes;
test-tubes + different or vary or not same;
stirring + different or vary or not the same;
drops of detergent + different sizes / volumes / detergent sticks to the sides;
timing + different or vary or not the same / reaction started before timing; [max 2]

(iv) (independent variable)
at least five differerent concentrations of copper sulfate or gives five examples;
(how made)
serial dilution or simple dilution or method must match any examples of concentrations given in mp1,
do not give mark if stated concentrations cannot be made by the stated dilution method (e.g. serial dilution cannot make 20%, 30%, 40%, 50%, 60%)

any of the following:
same volume / concentration of hydrogen peroxide or example given
or
same volume of copper sulfate or example of a volume given
or
same volume / concentration of plant extract or example given; [3]

(b) (i) *line graph:*
label on *x*-axis time (/) s or sec(onds) + label on *y*-axis number of bubbles of oxygen released;
scale *x*-axis 50 to 2 cm labelled each 2 cm + *y*-axis 20 to 2 cm labelled each 2 cm;
correct plotting of five of the plotted points as small cross or dot in circle;
ruled lines through five plotted points for distilled water;
ruled lines must not be too thick [4]

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(ii) *(idea of)* binds or fits enzyme or active site
or
alters or changes the shape of the enzyme or active site or denatures enzyme;
H or substrate no longer fits active site or fewer or no Enzyme-Substrate Complexes / ESCs are formed or described;
inhibition or inhibitor; [3]

[Total: 20]

2 (a) (i) drawing and quality;

do not give mark for
- any shading
- any ruled lines
- smaller than 60 mm across widest dimension of largest enclosed area
- less than 2 lines for the upper epidermis and 2 lines for the lower epidermis

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

no cells + at least 4 lines and one enclosed area + midrib with lamina each side;
convex top and bottom line across midrib;
third line under the upper epidermis (for palisade layer);
uses label line with label to vascular bundle; [5]

(ii) drawing and quality;

do not give mark for
- any shading
- any ruled lines
- smaller than 40 mm across widest dimension of largest cell
- less than 6 cells / enclosed areas

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

draws only three palisade cells and three epidermal cells + as one group (all cells touch at least one other cell);
no more than one rectangular (palisade cell) + palisade cells should all touch an (epidermal) cell;
all cells must be drawn with double lines + three lines where cells touch;
uses label line with label to only one palisade cell. [5]

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(b) (i) 1 0.8;

2 2 or 2.0 or 2.01; [2]

(ii) marks on stomata that were counted in quarter;
show a whole number multiplied by 4 (only);
shows any whole number divided by answer from **2 (b) (i)**;
rounded to whole number for answer; [4]

(c) mp1 organise as table with three columns separated by lines or three rows separated by lines no cell lines needed + two columns headed Fig 2.3 and Fig 2.4 in any order + third column or row contains at least one feature;

Any two of:

mp	feature	Fig. 2.3	Fig. 2.4
mp2	number of stomata	more or example of a number closer packed / nearer /gap narrower / clustered	few(er) or example of a number;
mp 3	size of stomata or epidermal cells or guard cells	small(er)	large(r);
mp 4	shape of stomata	oval or slit or elongated	round(er) or circular;
mp 5	guard cell shape stomata or guard cells	oval or elongated (more) closed or fewer open	round(er) or circlular; (less) open or more open;
mp 6	epidermal cell shape or pattern of lines	very irregular or not clear folded	clear or angular or corners smoother;
mp 7	epidermal cell walls	thin(ner)	thick(er);

[max 4]

[Total: 20]

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