CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the October/November 2013 series

9700 BIOLOGY

9700/33 Paper 3 (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.

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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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Expected answers

1 (a) (i) % concentration: 2 + 3 + 4;
(volume of milk:) 8 + 12 + 16 with (volume of water) 12 + 8 + 4; [2]

(ii) 5%; [1]

(iii) organised into table;
headings (top or to left of data) percentage concentration of triglycerides + (any column / row headed) time / seconds;
records results according to instructions, i.e. for 2, 3, 4, 5%;
correct pattern of results between first reading and last;
record all results as whole seconds; [5]

(iv) correct answer with units, s^{-1}; [1]

(v) replace milk / **M** with water / **W** or replace enzyme / **E** with water / **W**; [1]

(vi) one correct error such as difficult to judge end-point or equilibrate contents of all test-tubes; [1]

(b) (i) (*x*-axis) type of milk + (*y*-axis) time taken to reach end-point (/) seconds;

(*x*-axis) even bar widths up to 2 cm + (*y*-axis) 100 to 2 cm labelled each 2 cm except label at origin of 0;

correct plotting of each bar in order in the table with
- horizontal line
- ruled
- less than 1 mm;

bars, quality and labels:
- bars must have a space between
- all vertical bar lines drawn (including on axis if used), meet horizontal line, ruled lines,
- labels must be directly below correct bar or inside bar or shaded with key; [4]

(ii) fat concentration higher in evaporated milk (V) than in dried milk (D); [1]

(c) two correct variables identified;
correct description of how one variable standardized; [2]

[Total: 18]

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2 (a) (i) drawing and quality (LP of oleander leaf);
do not give mark if
- any shading
- drawn over print of question
- any ruled lines
- smaller than 60 mm at widest point on mid-rib
- less than 4 lines making up upper and lower epidermis

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

no cells + at least 4 lines and an enclosed area + only part of wall;
wavy layer for lower mid-rib or detail of vascular bundle;
uses label line and label to epidermis; [4]

(ii) drawing and quality;
do not give mark if
- any shading
- drawn over print of question
- any ruled lines
- smaller than 40 mm across widest point of largest cell
- less than 4 enclosed areas

or if any outer lines of enclosed areas are
- too thick
- feathery or dashed or gap in line
- have overlaps

only four whole cells drawn + at least one cell touching one other vessel;
only four whole cells drawn + shape of cells appropriate to xylem vessels;
cells walls as double lines for all vessels + three lines where vessels touch;
uses label line and labels lumen; [5]

(b) (i) 0.2;
correct answer (0.126) to no more than 3 significant figures; [2]

(ii) marks the chloroplasts that were counted in the quarter shown;
multiplies the number of chloroplasts by 4;
shows number of chloroplasts divided by area from **(b) (i)**;
answer rounded to whole number; [4]

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2 (c) (i) mp1 organise as table with <u>three</u> columns or rows separated by lines + two columns headed <u>Fig. 2.3</u> and <u>Fig. 2.4</u> in any order + third column or row contains at least one feature;

mp	feature	Fig. 2.3	Fig. 2.4
mp2	**Q** / cilia	absent	present;
mp3	**R** / algae	absent	present;
mp4	**S** / vacuole	absent / few	present / many;
mp5	chloroplasts	present	absent;
mp6	cells	multicellular	unicellular;
mp7	shape	rectangular	oval / circular;
mp8	nucleus	absent	present;
mp9	contents	absent	present;

[max 5]

(ii) primary consumer or second trophic level;
engulfed green algae; [2]

[Total: 22]

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