

**CAMBRIDGE**  
INTERNATIONAL EXAMINATIONS

**JUNE 2003**

**INTERNATIONAL GCSE**

**MARK SCHEME**

**MAXIMUM MARK: 40**

**SYLLABUS/COMPONENT: 0610/06**

**BIOLOGY**  
**(Alternative to Practical)**



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1 (a) Two from:

temperature or warmth or heat/[same type of] [amount of] yeast/type of flour/same size measuring cylinder/same mass or weight of dough/[same quantity of] [type of] sugar [2]

(ignore water [in q], amount of ingredients, pH, light, carbon dioxide, time, humidity, reading at eye level, cold)

(b) (i) Graph:

**O** orientation of axes and label of axes plus units;

**S** use of appropriate and even scale to fill half of the grid;

**P** plotting data A; B; C;

**K** key for separate date; max [5]

(ii) Line A - rises steadily;

Line B - does not rise/rises slightly/at a constant level;

Line C - rises and flattens; [2 stages] [3]

(iii) 80; [1]

(iv) Two from:

1. comment on **volume difference**, A more;

2. A has yeast [and B has none];

3. correct ref. to production of carbon dioxide; [2]

(v) Two from:

1. comment on **rate difference**/speeding up/faster;

2. substance X present in C [A has no X];

3. reasonable suggestion for role of substance X;

(accept enzyme, catalyst, improver, AW) [2]

**Total 15**

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2 (a) 2 conditions = 1 mark. No ½ marks.

warmth [correct/suitable temperature/10 to 30°C if specified];

oxygen;

but apply **ecf** for part (b)

[1]

(b) **Three from:**

1. identification of **one** workable condition **from (a)** for investigation - two sets one **with** and one **without**;

2. idea of sample size many seeds, a few seeds must be more than one seed for repetition idea;

3. some common factor of treatment between the two sets [with and without the condition] under investigation;  
(equal watering, equal number of seeds, same species AW)

4. left to grow for same time period;

(if stated minimum 1 + days, accept up to 3 weeks)

max [3]

**Total 4**

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**3 (a) (i) Drawing:**

clear outline;

correct proportions;

**Labels – 2 from:**

Tentacles;

eye [to be located at the end of the larger tentacles];

foot [qualified];

shell [dorsal/visceral shell or hump];

unsegmented body;

(ignore reference to negative features) [4]

**(ii) Magnification:**

Check measurements given are those transcribed into the formula -  
drawing size;  
actual size

calculation is correct stated as ....x 1+  
(this must be more than 1 if drawings is as large as fig 3.1) max [2]

**(iii) Similarity – one from:**

both have tentacles/eyes/same head/shell;

**Difference – one from:**

A has no large external shell and B has/shell has different  
shape or comment on shape; AW [2]

**(iv) mollusc:** [1]

**Total: 9**

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- 4 (a) (i)** introduce a glowing splint/spill  
(do not award for match will burn/candles lighting/splints that are already burning)
- addition of pyrogallol; [1]
- (ii)** photosynthesis; [1]
- (iii)**  $10 \text{ cm}^3$ ;  
 $10 \div 5 = 2 \text{ cm}^3$ ; [2]
- (iv) Two from**, for design of experiment:
- method for setting up different light intensities;  
(bright light in introduction - so maybe dimmer or less light but must have detail of how this is to be achieved/distances away from light bulb/AW)
  - describe how to control a factor that may alter rate over a certain time  
(temperature - heat shield, carbon dioxide by adding hydrogen carbonate/AW)
  - additional feature of design –  
(same time period for comparison of results/eliminate background light, carry out investigation in a darkened room/replicates/ repetition/same piece of pondweed/recovery time between sets of measurements AW) max [2]

**(b)**

	<b>Colour</b>	<b>Explanation</b>
<b>(i)</b>	purple [1]	carbon dioxide used up/ photosynthesis [1]
<b>(ii)</b>	red/orange [1]	balance [between photosynthesis and respiration] [1]
<b>(iii)</b>	yellow [1]	respiration of 3 water shrimps/ produce carbon dioxide [1]

**Total: 12**