JUNE 2003

INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK: 40

SYLLABUS/COMPONENT: 0610/06

BIOLOGY
(Alternative to Practical)
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
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
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 \(\ldots \times 1+\)
- (this must be more than 1 if drawings is as large as fig 3.1) \[2\]

(iii) **Similarity – one from:**

- both have tentacles/eyes/same head/shell;

(iv) ** 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
4  (a)  (i) introduce a glowing splint/spill
(don't award for match will burn/candles lighting/splints that are already burning)

addition of pyrogallol;  \[1\]

(ii) photosynthesis;  \[1\]

(iii) \(10 \text{ cm}^3\);
\[
10 \div 5 = 2\text{ cm}^3; \quad [2]
\]

(iv) **Two from**, for design of experiment:

1. 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)
2. describe how to control a factor that may alter rate over a certain time
   (temperature - heat shield, carbon dioxide by adding hydrogen carbonate/AW)
3. 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) \[max \quad 2\]

(b)

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

**Total:** 12