<table>
<thead>
<tr>
<th>Question</th>
<th>Answers</th>
<th>Extra information</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>01.1</td>
<td>C: water + carbon dioxide → glucose + oxygen</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>01.2</td>
<td>C₆H₁₂O₆</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>01.3</td>
<td>energy is absorbed</td>
<td>Ignore light.</td>
<td>1</td>
</tr>
<tr>
<td>01.4</td>
<td>produces food / energy (for animals) produces oxygen for respiration</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>02.1</td>
<td>oxygen</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>02.2</td>
<td>to allow water to circulate and provide carbon dioxide (to pondweed)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>02.3</td>
<td>measure the volume of gas produced or count the number of bubbles produced in a given time or every minute / hour</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>02.4</td>
<td>any three from: light intensity concentration of carbon dioxide amount of chlorophyll temperature</td>
<td>Ignore amount of water.</td>
<td>3</td>
</tr>
<tr>
<td>03.1</td>
<td>step 1 – to kill the leaf or to stop any further reactions step 2 – to remove the chlorophyll / green colour step 3 – to remove the ethanol or to soften the leaf step 4 – to detect / stain any starch</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>03.2</td>
<td>wear goggles keep away from naked flames or switch off the Bunsen burner</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>03.3</td>
<td>chlorophyll is needed to make starch</td>
<td>Allow for 1 mark starch is only made in the green part of a leaf.</td>
<td>2</td>
</tr>
</tbody>
</table>
Level 1 (1–2 marks) | Level 2 (3–4 marks) | Level 3 (5–6 marks)
---|---|---
No relevant content. | Some raw materials are referred to. | The raw materials for photosynthesis are included and a reference to sugar and starch / protein being produced. A clear description of photosynthesis is given and the use of glucose to produce starch and protein. For full marks a reference to nitrates in protein synthesis is also required.

04 examples of the points made in the response:
- carbon dioxide needed
- (carbon dioxide) absorbed from the air
- water needed
- (water absorbed from the soil)
- light required
- (which is) absorbed by chlorophyll / chloroplasts
- for photosynthesis
- to produce glucose / sugar
- sugar / glucose join together to make starch

05.1 palisade mesophyll | 1 |
05.2 lots of chlorophyll packed closely together to maximise surface area exposed to light | 1 |
05.3 guard cells | 1 |
05.4 the cells open and close the stomata to control water loss and gas exchange from the leaves | 2 |