Commentary on candidate 4 evidence

The evidence for this candidate has achieved the following marks for each section of this course assessment component.

<table>
<thead>
<tr>
<th>Section</th>
<th>Mark available</th>
<th>Mark awarded</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Aim</td>
<td>1</td>
<td>1</td>
<td>The aim clearly describes the purpose of the investigation.</td>
</tr>
<tr>
<td>2 Underlying biology</td>
<td>3</td>
<td>2</td>
<td>There are at two expanded descriptions/explanations, which are relevant to the aim and at a depth appropriate to National 5 Biology.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>♦ ‘Most enzymes… range of an enzyme.’ (Description of the working range of enzymes.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>♦ ‘This leads to… denatured.’ (Explanation of the effect of pH on the enzyme.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The other information given is confused or incorrect eg ‘optimum conditions’; ‘as temperature or pH increases enzyme activity will also increase’; ‘the increase in pH or temperature begins to break apart the enzyme’.</td>
</tr>
<tr>
<td>3 Data collection and handling</td>
<td>6</td>
<td>a 1</td>
<td>The brief description of the experiment is suitable, as there is sufficient detail to allow the nature of the experiment to be visualised.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b 1</td>
<td>The raw data is sufficient. An appropriate number of values (5 pH’s), over a suitable range, has been used for this experiment. Repeated measurements have also been made.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The ‘Average’ column of the table is considered in section 3d.</td>
</tr>
</tbody>
</table>
|   | c | 0 | The experimental data is presented in a table but not all of the column headings are clear in their meaning.  
|   |   |   | The ‘Height of froth (mm)’ heading does not extend over the last column (average), leaving that column with an insufficient heading.  
|   | d | 1 | The mean values (averages) from the candidate’s experimental data are calculated correctly and are included in the table.  
|   | e | 1 | Research data (line graph) that is relevant to the aim and supports the experimental data is included.  
|   |   |   | Although this data is about a different enzyme from the experimental data, it is still relevant to the aim, as the aim does not focus on a particular enzyme.  
|   | f | 1 | The source of the research data is referenced as per the instructions for candidates. This is given in sufficient detail for it to be retrieved by a third party.  
| 4 | Graphical presentation | 4 | a | 1 | The graph produced is based on the candidate’s experimental data. A line graph is selected which is the appropriate format for this data.  
|   | b | 1 | Both axes have suitable scales.  
|   | c | 1 | Both axes have suitable labels and units.  
|   | d | 0 | The point for pH 7 is not plotted accurately (it is outwith the ½ box tolerance).  

### Analysis
- **Score**: 1
- **Comment**: A valid comparison is made between the experimental data and the research data (line graph). A description is given to show that both have similar trends.

### Conclusion
- **Score**: 1
- **Comment**: The conclusion given is valid as it relates to the aim and is supported by the data given in the report.

### Evaluation
- **Score**: 2
- **Comment**: A factor that could have had a significant effect on the reliability, accuracy or precision of the experiment has not been identified.

There is no explanation as to why the use of a water-soluble pen would make it easier to measure the height of the foam.

### Structure
- **Score**: 2
- **Comment**: An informative title is given.

- **Score**: a
- **Comment**: The report is clear and concise.

### Total
- **Score**: 20
- **Comment**: 15