Example Question 1
(2013 HSC Chemistry exam) Question 21 (4 marks)

Describe the difference between the roles of TWO named types of T cells in the immune response in humans. (4 marks)
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Example Question 2
(2013 HSC Chemistry exam) Question 24 (7 marks)

(a) Draw a flowchart showing the steps you could take to model Pasteur’s experiment to identify the role of microbes in decay. (4 marks)

(b) Explain the importance of using controls in microbial experiments. (3 marks)
Example Question 3
(2012 HSC Chemistry exam) Question 26 (5 marks)

A scientist performed an epidemiological study to investigate the cause and effect relationship of smoking and lung cancer as follows.

1. Handed out a scientifically valid questionnaire to all colleagues (n = 144) at work
2. Checked that there were an equal number of male and female respondents
3. Discovered that there were more non-smoking respondents that smoking respondents. Removed some of the non-smokers until both groups had equal numbers
4. Checked that all the respondents had a medical check-up in the past year
5. Analysed data, wrote the paper and published it in a scientific blog.

From the information provided, analyse the methodology used by this scientist. (5 marks)
Example Question 4

(2011 HSC Chemistry exam) Question 24 (5 marks)

a) Name a viral disease that is controlled by the use of a vaccine. (1 mark)

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b) The flowchart shows the steps involved in the preparation of a vaccine to prevent a viral disease.

```
Isolate virus
↓
Break up virus particles
↓
Retain protein coat
↓
Suspend protein in saline solution
↓
Viral vaccine
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i) Outline how a vaccine that is prepared in this way will produce immunity to a specific viral disease. (2 marks).

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ii) Explain ONE procedure in the flowchart that ensures the safety of the prepared vaccine.

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Example Question 5

(2011 HSC Biology exam) Question 27 (4 marks)

A new non-infectious disease has been discovered in people in some aged care homes.

Outline at least FOUR features of an epidemiological study that could be used to identify the cause of this disease. (4 marks)

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HSC Biology 9.4 Search for Better Health Example Questions
Example Question 6
(2010 Paper) Question 22 (6 marks)

The following data were recorded about the effectiveness of antimalarial drugs for treating malaria.

<table>
<thead>
<tr>
<th>Year</th>
<th>Mefloquine</th>
<th>Quinine</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>1978</td>
<td>100</td>
<td>85</td>
</tr>
<tr>
<td>1980</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>1984</td>
<td>100</td>
<td>72</td>
</tr>
<tr>
<td>1988</td>
<td>90</td>
<td>64</td>
</tr>
<tr>
<td>1992</td>
<td>70</td>
<td>58</td>
</tr>
</tbody>
</table>

a) Graph the data on the grid. (3 marks)
Example Question 6 (continued)
(2010 Paper) Question 22 (6 marks)

b) Use these data to explain the impact of human processes on biodiversity. (3 marks)

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Example Question 7
(2002 Paper) Question 19 (5 marks)

(a) Describe the conditions under which a nucleus is unstable. (2 marks)

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(b) The following is a flow diagram showing the sequence of products released during the decay of uranium.

Use examples from the flow diagram to describe processes by which an unstable isotope undergoes radioactive decay. (3 marks)

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