# Task 1

Describe the relationship between pH and enzyme activity shown in the graph below.

pH

6

8

10

12

Activity

**Fumarase**

**Arginase**

**Key connectives:**

|  |  |  |  |
| --- | --- | --- | --- |
| for instance | before | after | next |
| also | as the | until | when the |

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|  |  |  |  |
| --- | --- | --- | --- |
| for instance | before | after | next |
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Scientific writing should always be clear, concise and accurate. Sentences should be short (10 – 20 words) and uncomplicated.

|  |  |
| --- | --- |
| **Impersonal** | Avoid using personal terms e.g. I, we, they, you. |
| **Formal and objective** | Avoid using contractions (‘did not’ instead of ‘didn’t’), emotional (e.g. sadly) or slang terms.  |
| **Present tense** | E.g. ‘The results show that …’. (Use the **past** tense when describing your experiment.) |
| **Causal connectives** | These help explain cause and effect e.g. because, therefore, so, due to, this causes etc. |

# Task 2

In the table below are two examples of an explanation of the enzyme graph. For each feature of text, choose the correct example (1 or 2).

pH

6

8

10

12

Activity

**Fumarase**

**Arginase**

|  |  |  |
| --- | --- | --- |
| **Features of scientific writing** | **Example 1** | **Example 2** |
| Which example is impersonal? | Enzymes each have a different and specific optimum pH. | I found that each enzyme had a different and specific optimum pH.  |
| Which example is formal? | If the bonding is changed, then the shape of the active site is changed so unluckily it can’t fit with the substrate any more.  | If this bonding is altered, then the shape of the active site will be changed. Consequently, the enzyme is no longer able to fit with the substrate |
| Which example uses the present tense? | This happened because when we altered the pH… | This happens because altering the pH…  |
| Which example uses a causal connective? | Consequently, the enzyme is no longer able to fit with the substrate | This alters the pH…  |

# Task 3

Read the following conclusions, which refer to the graph below. Which has been written in the more scientific way?

Pick out and highlight features of good scientific writing in the text.

|  |
| --- |
| 1. *Enzymes each have a different and specific optimum pH. This is the pH at which they have the maximum rate of reaction. This happens because altering the pH affects the bonding that holds the enzyme together. If this bonding is altered, then the shape of the active site will be changed. Consequently, the enzyme is no longer able to fit with the substrate, which slowed the rate of reaction at extremes of pH.*
 |
|  |
| 1. *I found that each enzyme had a different and specific optimum pH. The optimum pH is where the enzyme had the highest rate of reaction. This happened because when we altered the pH, the bonding that holds the enzyme together was also changed. If the bonding is changed, then the shape of the active site is changed so it won’t fit with the substrate any more. This slowed the rate of reaction and eventually stopped it completely.*
 |

pH

6

8

10

12

Activity

**Fumarase**

**Arginase**

# Answers

**Task 2**

|  |  |  |
| --- | --- | --- |
| **Features of scientific writing** | **Example 1** | **Example 2** |
| Impersonal | Enzymes each have a different and specific optimum pH. | I found that each enzyme had a different and specific optimum pH.  |
| Formal | If the bonding is changed, then the shape of the active site is changed so it can’t fit with the substrate any more.  | If this bonding is altered, then the shape of the active site will be changed. Consequently, the enzyme is no longer able to fit with the substrate |
| Present tense | This happened because when we altered the pH… | This happens because altering the pH…  |
| Causal connectives | Consequently, the enzyme is no longer able to fit with the substrate | This alters the pH…  |