

0 5 . 1

Describe how monomers join to form the primary structure of a protein.

[3 marks]

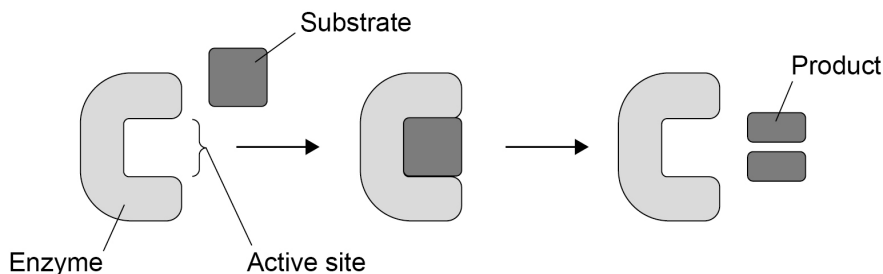
0 5 . 2

Many proteins are enzymes.

In 1894, a scientist suggested the lock and key model of enzyme action.

Figure 5 shows the lock and key model.

Figure 5



Describe **one** similarity and **one** difference between the induced-fit model of enzyme action and the lock and key model of enzyme action.

[2 marks]

Similarity _____

Difference _____



0 5 . 3 State how enzymes help reactions to proceed quickly at lower temperatures.

Do **not** write about active sites in your answer.

[1 mark]

0 5 . 4 The enzyme maltase catalyses the hydrolysis of maltose to glucose.

A scientist investigated maltase activity in two different maltose solutions, **G** and **H**.

For each solution, he measured:

- the total number of glucose molecules produced by complete hydrolysis of the maltose
- the time taken for the complete hydrolysis of the maltose.

Table 3 shows his results.

Table 3

Solution	Total number of glucose molecules produced	Time taken for complete hydrolysis of maltose / s
G	4×10^7	20
H	6×10^8	

Complete **Table 3** by calculating the time taken for the complete hydrolysis of the maltose in solution **H**. Assume the rate of maltase activity is the same in solution **G** and in solution **H**.

Show your working.

[2 marks]

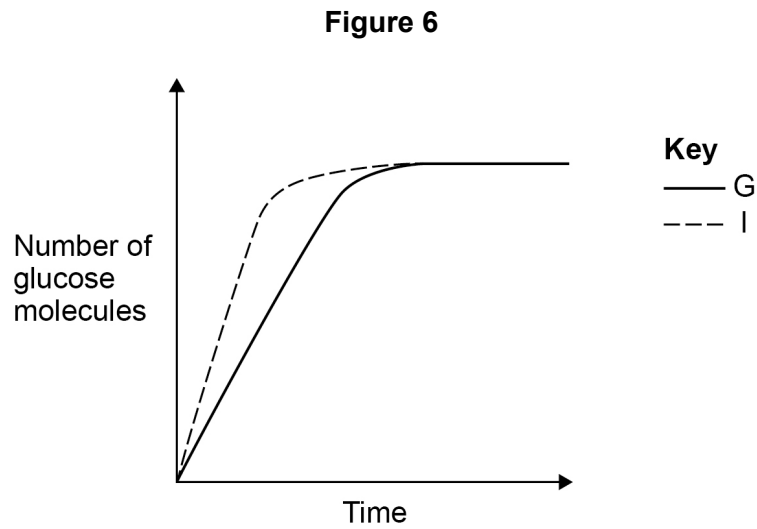
Question 5 continues on the next page

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0 5 . 5

Figure 6 shows the scientist's results for solution **G**. Curve **I** shows the results of a similar investigation in which he changed one independent variable.



Tick (✓) **one** box next to the statement that describes the independent variable that the scientist changed to give the results shown by curve **I** in **Figure 6**.

[1 mark]

Addition of a competitive inhibitor

Increased maltase concentration

Increased maltose concentration

Reduced temperature

9

