Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Q1.

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

_____

_____

_____

_____

_____

_____

_____

_____

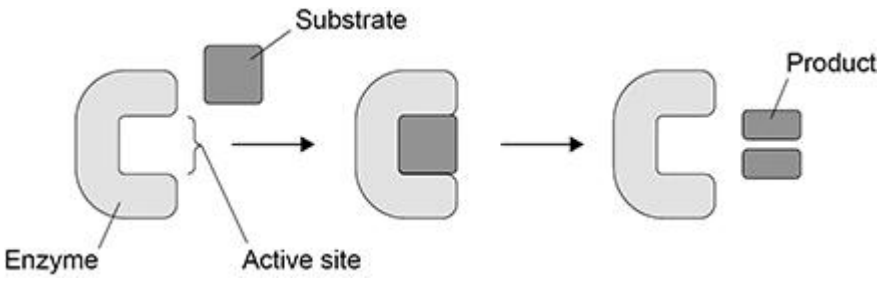
(3)

(b) Many proteins are enzymes.

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

Figure 1 shows the lock and key model.

Figure 1



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

Similarity _____

_____

Difference _____

_____

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(2)

(c) State how enzymes help reactions to proceed quickly at lower temperatures.

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

_____

_____

(1)

(d) 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.

The table below shows his results.

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 the table 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**.

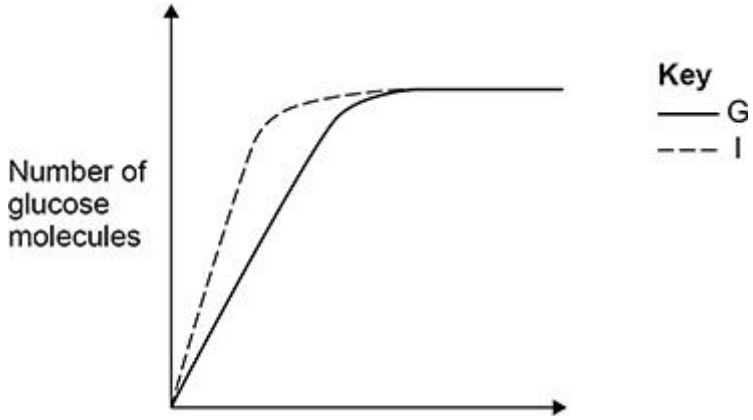
Show your working.

(2)

(e) **Figure 2** shows the scientist's results for solution **G**. Curve **I** shows the results of a similar investigation in which he changed one independent variable.

Figure 2

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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 2**.

Addition of a competitive inhibitor	☐
Increased maltase concentration	☐
Increased maltose concentration	☐
Reduced temperature	☐

(1)

(Total 9 marks)

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Q2.

(a) What term is used to describe the different structures of α-glucose and β-glucose?

_____

(1)

(b) A student investigated the difference in the reducing sugar content of two fruit juices. He performed a biochemical test on each fruit juice using Benedict's solution. He then used a colorimeter with each test result.

Describe how the results from the colorimeter can identify the fruit juice containing the higher sugar content.

_____

_____

_____

_____

(1)

(c) The student controlled variables in the test using Benedict's solution.

Give **two** variables the student controlled.

1 _____

2 _____

(2)

(d) Apples consist of flesh tissue which surrounds core tissue where the seeds are located.

A student has an apple with a mass of 180 g
The ratio of flesh tissue to core tissue in this apple is 5:1
8% of the whole apple is sugar.

Calculate the mass of sugar in the flesh tissue.

Show your working.

Answer _____ g

(2)

(e) Iodine solution stains fresh apple tissue black. When iodine solution is added to apples stored for a week, the stain is less black.

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The water potential of apple juice decreases when apples are stored.

Suggest why the water potential of apple juice decreases when apples are stored.

_____

_____

_____

_____

_____

_____

(2)

(Total 8 marks)

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