# Revision Sheet

IGCSE Biology · Unit 5 Enzymes

6 vocabulary items · 23 marks of exam questions (4 questions)

*Part 1 · Vocabulary review (6 items). The terms this unit is examined on most. Mark it yourself from the answer key.*

## Section A · Chinese to English

*Write the English word.*

1. _____ [1]

2. _____ [1]

3. _____ [1]

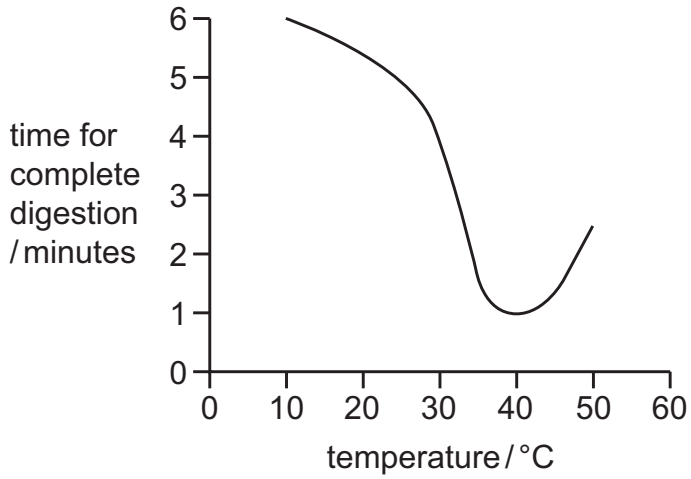
4. _____ [1]

5. _____ [1]

6. _____ [1]

*Part 2 · Exam questions (23 marks, 4 questions) begins on the next page. They are ordered easy to difficult and none of them has been set before.*

**7** The graph shows the effect of temperature on the time taken for the complete digestion of starch.

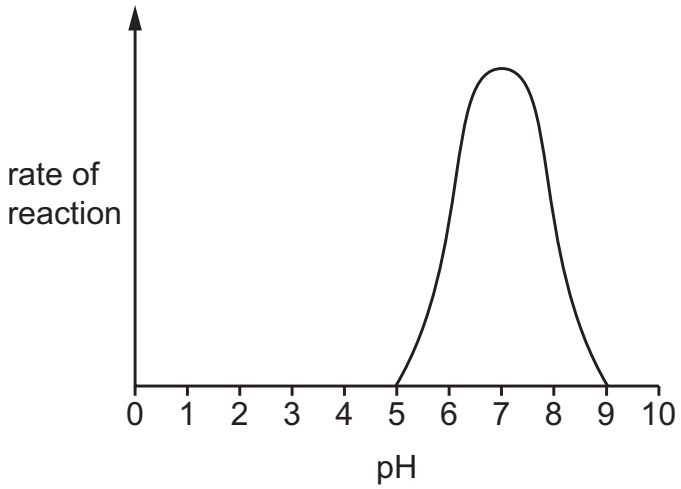



At which temperature is the rate of digestion of starch the greatest?

**A** 10 °C **B** 30 °C **C** 40 °C **D** 50 °C



**8** The graph shows the effect of pH on the rate of an enzyme-catalysed reaction.




What explains the effect of pH on the reaction rate?

**A** As the pH increases from 5 to 7, the kinetic energy increases.

**B** As the pH increases from 7 to 9, the frequency of enzyme and substrate collisions increases.

**C** The shape of the enzyme's active site changes as the pH increases from 7 to 9.

**D** The substrate denatures at pH 7.

**9** **(a)** A researcher investigated the effect of temperature on two different biological washing powders, **A** and **B**.

Two identical pieces of clothing were stained with the same type of food.

The researcher timed how long each washing powder took to remove the stains, at different temperatures.

Fig. 6.1 is a graph of the results.

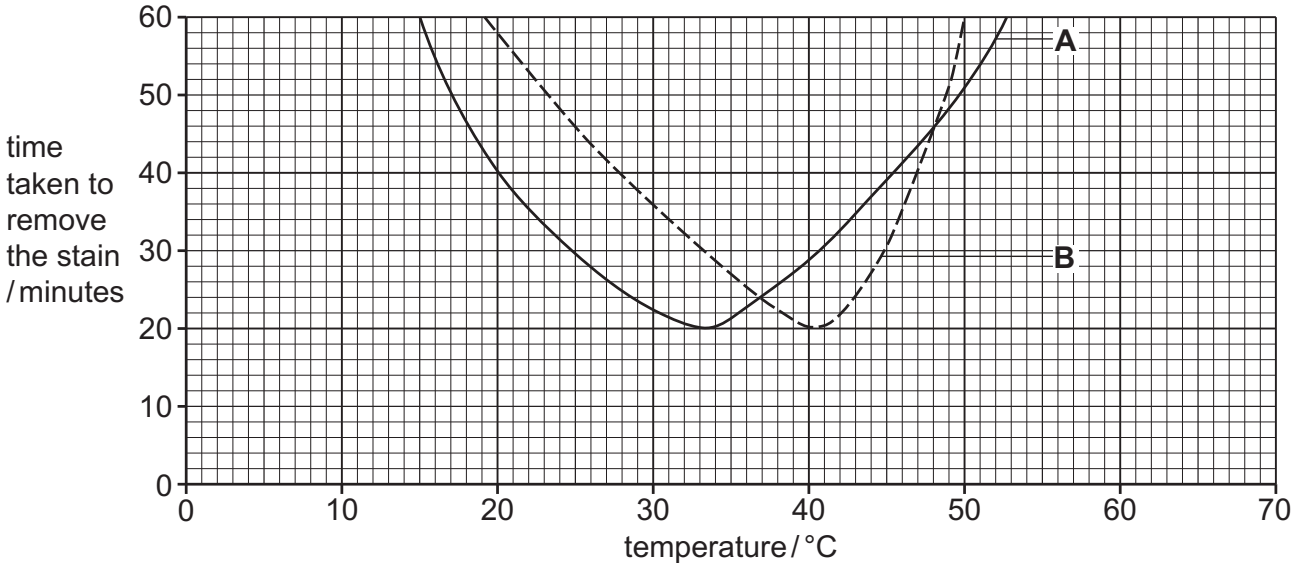



**Fig. 6.1**

**(i)** Determine the time taken for washing powder **A** to remove the stain at 20 °C.

..... minutes [1]

**(ii)** State why 40 °C is the best temperature to use for washing powder **B**.

.....

.....

..... [1]

**(iii)** A student stated some conclusions for the results shown in Fig. 6.1.

Tick (✓) **two** boxes that show two correct conclusions for the results shown in Fig. 6.1.

| | |
|---|---|
| Washing powder **B** is active over a greater range of temperatures than washing powder **A**. | |
| Washing powders **A** and **B** do **not** work at 50 °C. | |
| Washing powders **A** and **B** have the same activity at 37 °C. | |
| Washing powder **A** can remove the stain in 15 minutes. | |
| Washing powder **A** is more effective at lower temperatures than washing powder **B**. | |

[2]

© UCLES 2022

**(b)** State **one** factor, other than temperature, that affects enzyme activity.

..... [1]

**(c)** Enzymes are biological catalysts.

Define the term catalyst.

.....

.....

..... [2]

**(d)** Fig. 6.2 is a diagram showing the action of an enzyme.

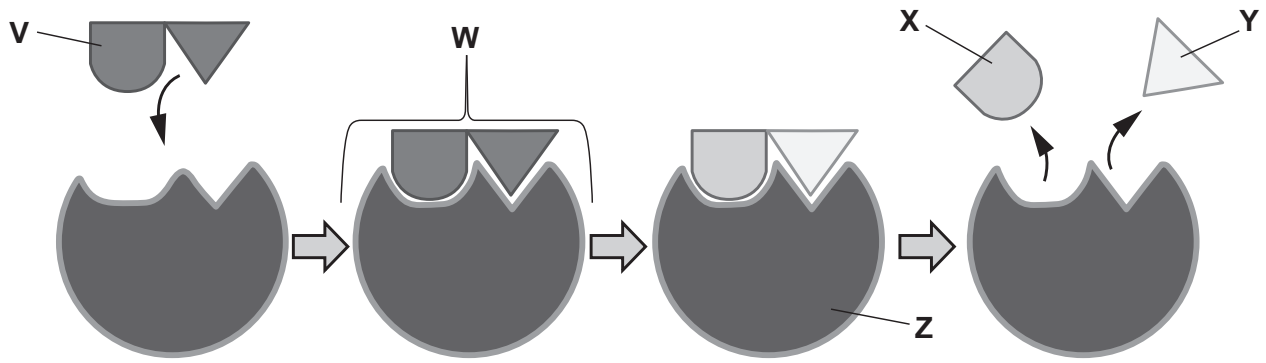



**Fig. 6.2**

State the letter or letters from Fig. 6.2 that represent the:

substrate .....

enzyme .....

[2]

**(e)** Lipase is an enzyme commonly found in washing powder.

Complete the word equation for the reaction that involves the enzyme lipase.

..... $\xrightarrow{\text{lipase}}$ ..... + glycerol

[2]

[Total: 11]

**10** **(a)** Some students were studying the activity of yeast. They made a fact file, as shown in Fig. 1.1.

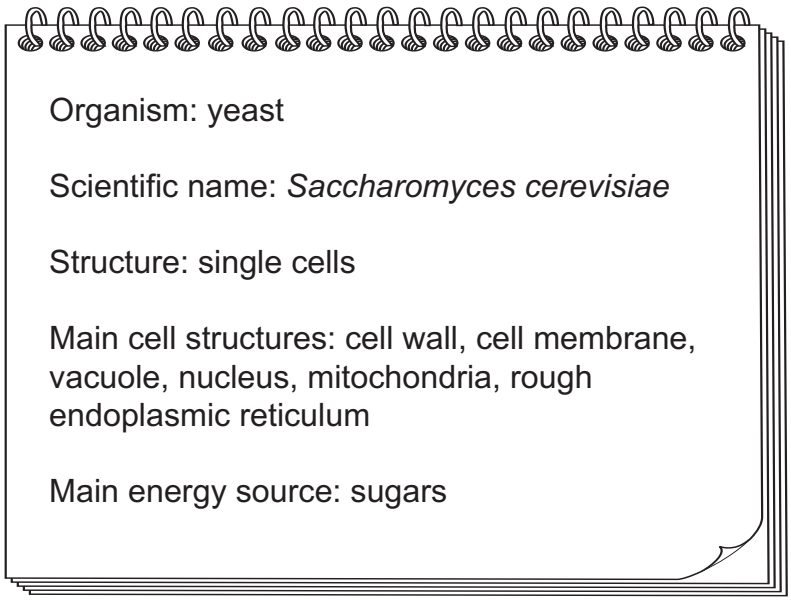



**Fig. 1.1**

**(i)** State the kingdom in which yeast is classified.

..... [1]

**(ii)** State the process that occurs in mitochondria to provide energy for yeast cells.

..... [1]

**(b)** Yeast cells make the enzyme sucrase. Sucrase catalyses the breakdown of sucrose to glucose and fructose.

Enzymes are made of protein.

Explain how the shape of a sucrase molecule is related to its function.

.....

.....

.....

.....

..... [2]

**(c)** The students made an extract of sucrase from yeast cells.

They investigated the activity of the sucrase extract at different pH values. They determined the rate of reaction at each pH.

They then calculated the rate of each reaction as a percentage of the fastest reaction, to give the percentage activity of sucrase.

The results of this investigation are shown in Fig. 1.2.

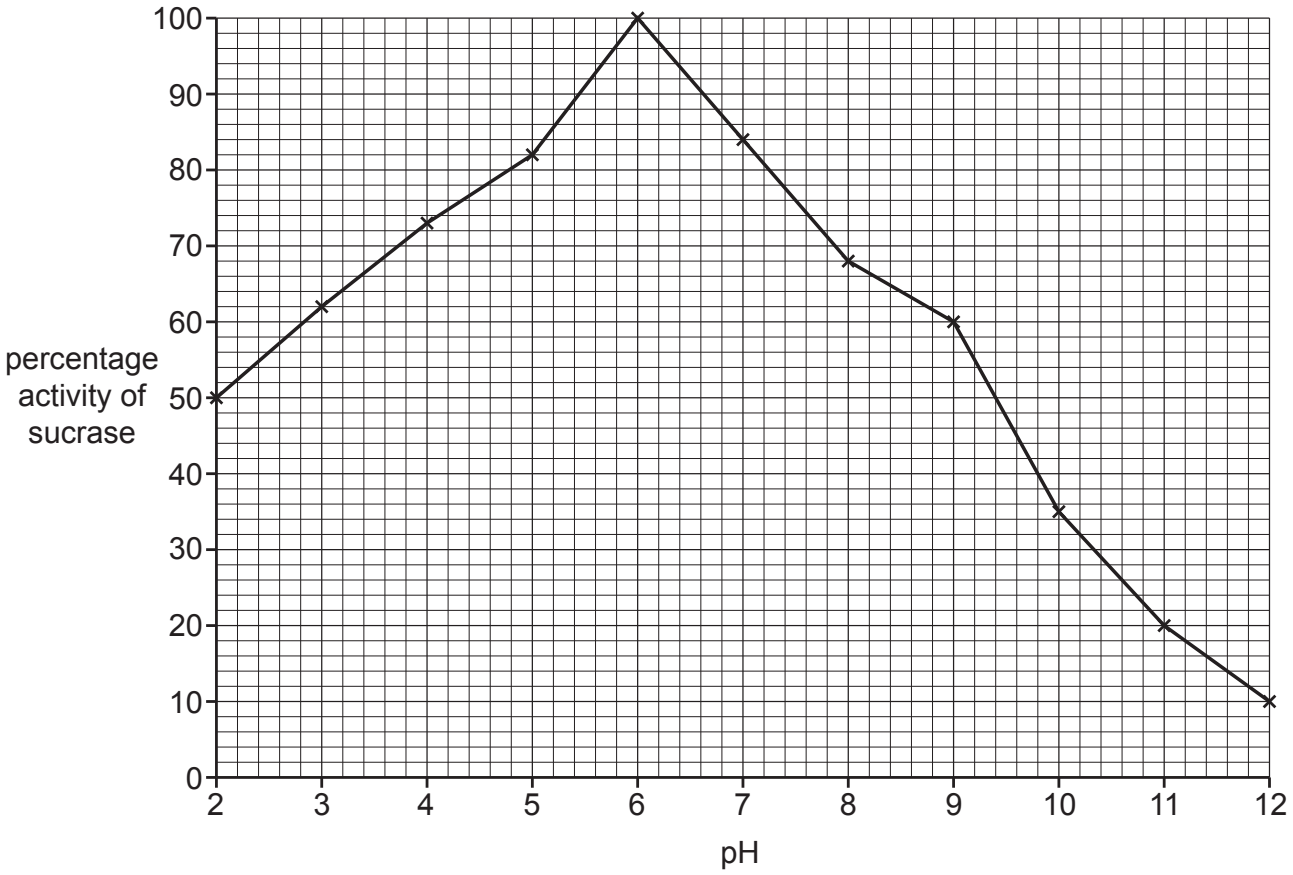



**Fig. 1.2**

Describe **and** explain the effect of pH on the activity of sucrase shown in Fig. 1.2.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [6]

[Total: 10]