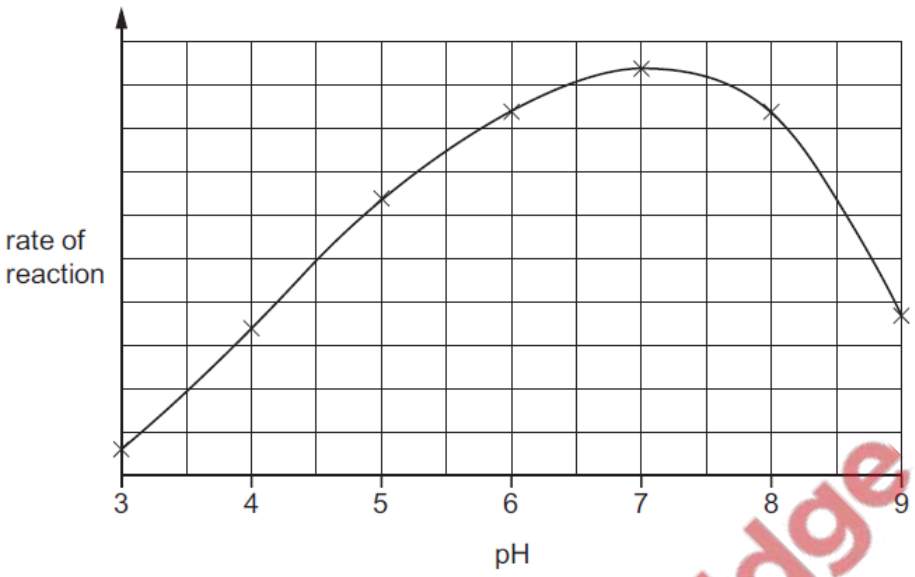
Enzymes – 2020 IGCSE 0610

1. Nov/2020/Paper_11/No.10

The graph shows the effect of pH on the rate of reaction of an enzyme.



What does the graph show?

A The enzyme is destroyed at pH 9.

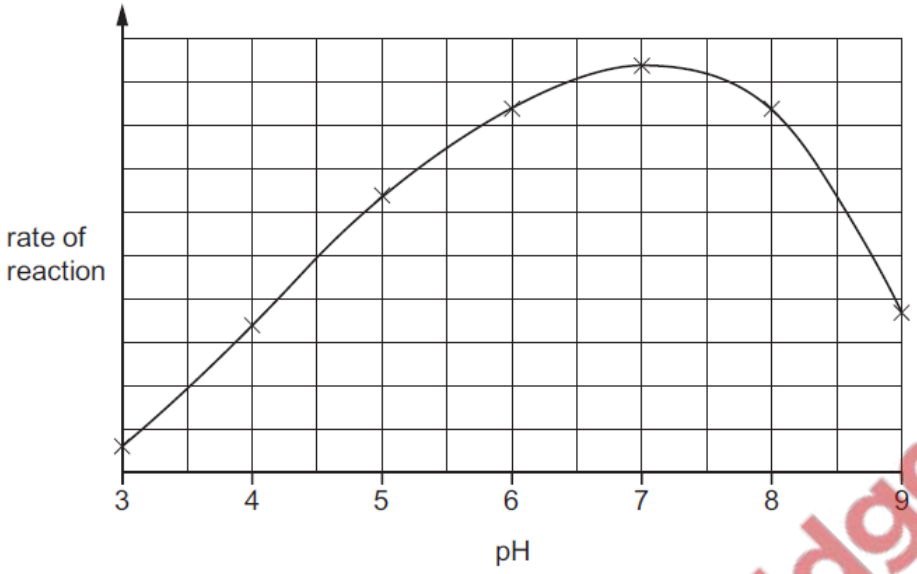
B The enzyme works best at pH 6.

C The rate of reaction halves as the pH changes from pH 5 to pH 7.

D The rate of reaction is the same at pH 5 and pH 8.5.

2. Nov/2020/Paper_12/No.10

The graph shows the effect of pH on the rate of reaction of an enzyme.



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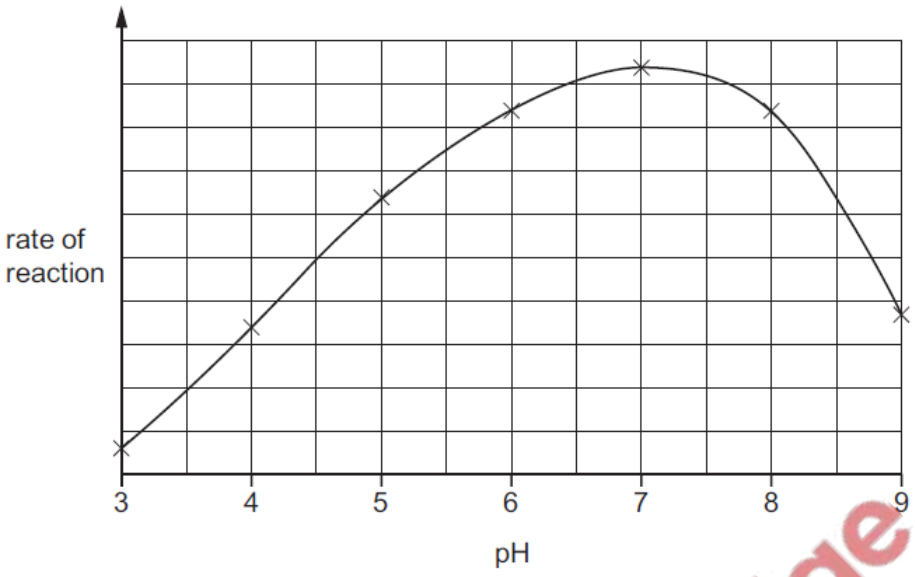
3. Nov/2020/Paper_13/No.10

The graph shows the effect of pH on the rate of reaction of an enzyme.



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4. Nov/2020/Paper_13/No.11

What kind of molecule is an enzyme?

A fat

B glucose

C protein

D starch

5. Nov/2020/Paper_21/No.9

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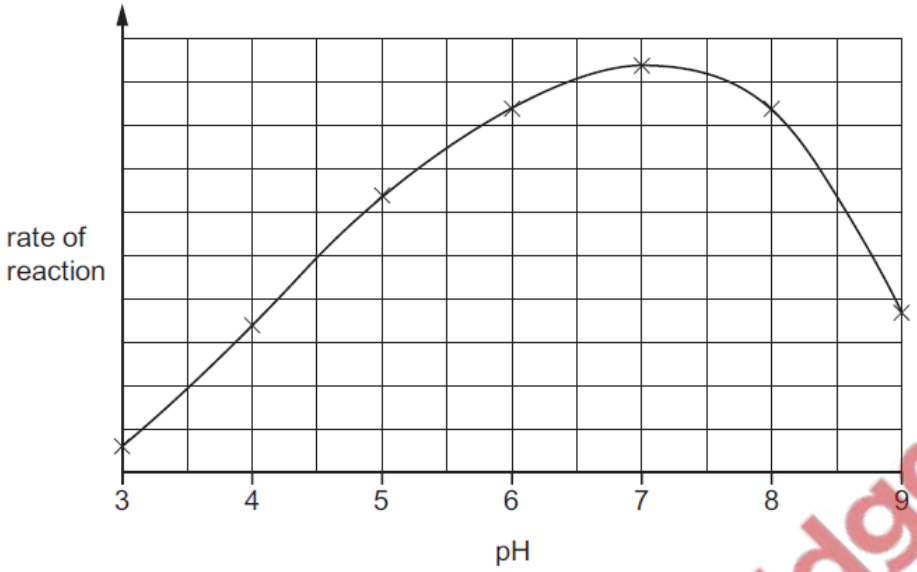

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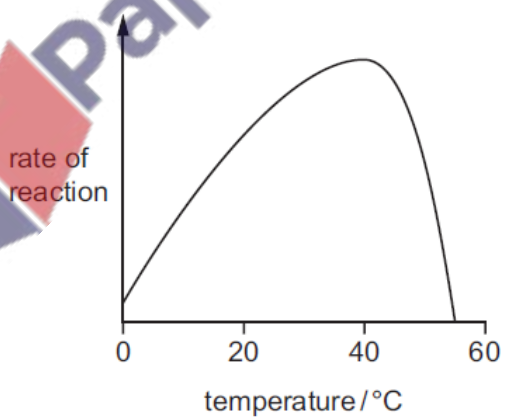
6. Nov/2020/Paper_21/No.10

The graph shows how enzyme activity is affected by temperature.



How can the change in activity between 40 °C and 55 °C be explained?

A Heat has killed the enzyme.

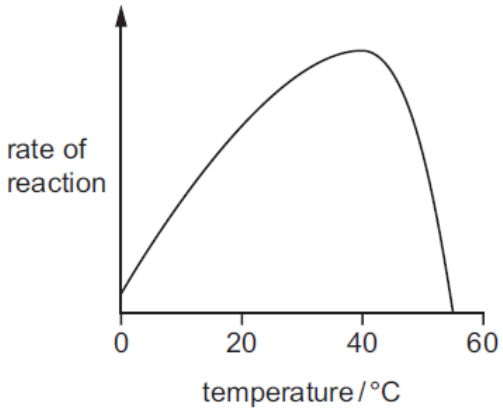
B The enzyme has been used up.

C The reactants are moving faster.

D The substrate is less likely to fit into the active site.

7. Nov/2020/Paper_22/No.9

The graph shows how enzyme activity is affected by temperature.



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8. Nov/2020/Paper_22/No.9

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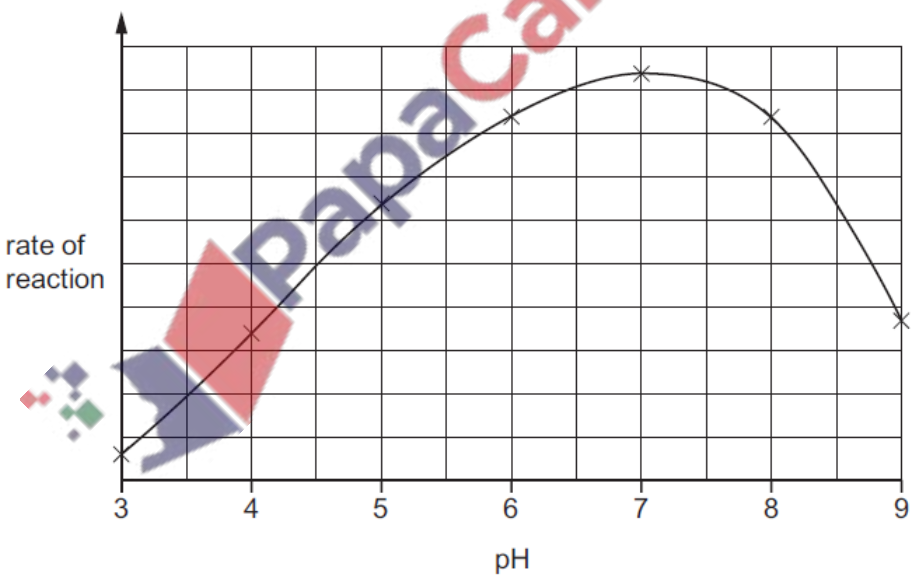

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9. Nov/2020/Paper_23/No.9

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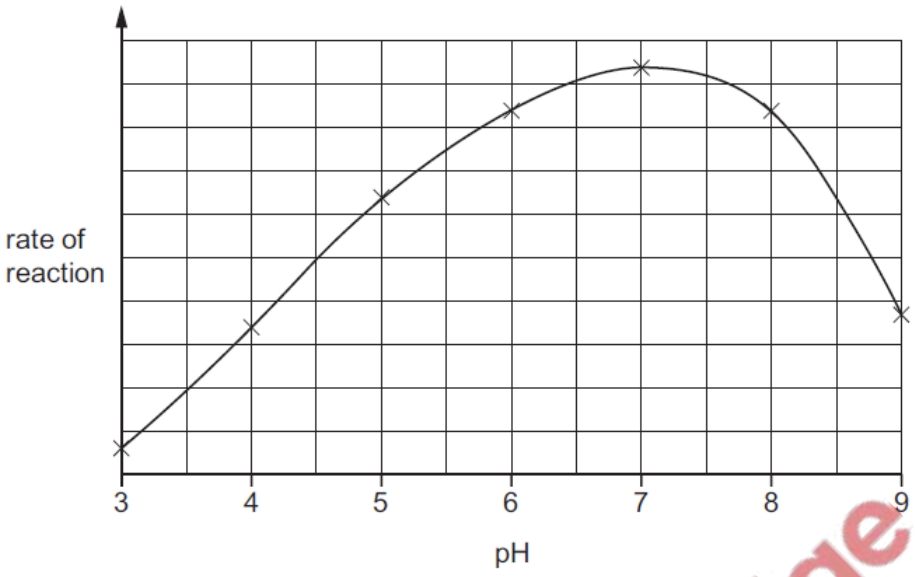

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10. Nov/2020/Paper_23/No.10

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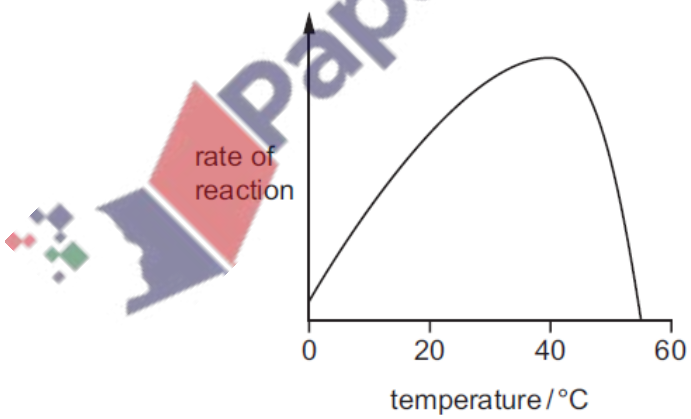

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11. Nov/2020/Paper_31/No.6

(a) Pectinase is an enzyme that is used in the production of apple juice.

A student investigated how pH affected the volume of apple juice produced when using pectinase.

The student chopped an apple into small pieces.

The pieces of apple were put into solutions with different pH values.

Pectinase was added to each solution.

After two hours the mixture was filtered and the volume of apple juice obtained was recorded.

Table 6.1 shows the results.

Table 6.1

pH	volume of apple juice obtained / cm^3
1.0	23.2
2.0	24.2
3.0	23.5
4.0	25.7
5.0	27.6
6.0	27.4
7.0	24.0
8.0	22.0

(i) State the pH at which pectinase is most active.

Give a reason for your answer.

pH .....

reason .....

.....

.....

[2]

(ii) State **one** factor, other than pH, that would affect the activity of pectinase.

..... [1]

(b) Pectinase is an enzyme.

The box on the left shows the beginning of a sentence.

The boxes on the right show some endings of sentences.

Draw **three** lines from the word 'Enzymes' to make three correct sentences.

Enzymes	are living organisms.
	are proteins.
	can only be used once.
	have a complementary shape to their substrate.
	increase the rate of chemical reactions.
	in the stomach are most active at pH 8.

[3]

(c) State **one** use of enzymes in biotechnology other than fruit juice production.

..... [1]

(d) Many types of enzymes are involved in digestion.

State the names of **two** digestive enzymes in the human alimentary canal.

1 .....

2 .....

[2]

[Total: 9]

12. Nov/2020/Paper_41/No.5

Milk is a source of some of the nutrients that are part of a balanced diet.

(a) Calcium and protein are two nutrients found in milk.

Describe the importance of calcium and protein in the diet.

calcium .....

.....

.....

protein .....

.....

.....

[4]

(b) Lactose is found in cows' milk. Some people do not have the enzyme to digest lactose.

State the names of **two** organs, associated with the alimentary canal, that produce enzymes.

1 .....

2 .....

[2]

(c) Fig. 5.1 shows a flow diagram for the production of lactose-free milk.

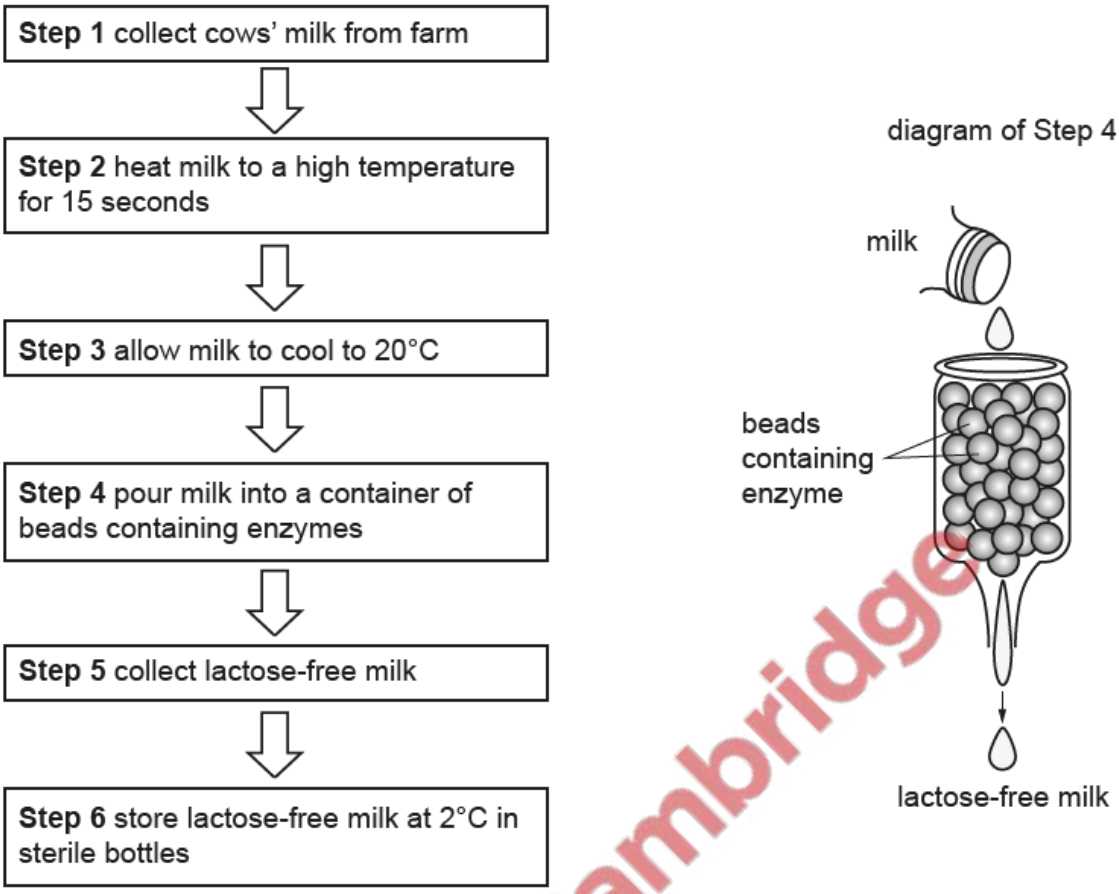

Fig. 5.1

(i) Explain how heating the milk in **step 2** in Fig. 5.1 ensures the hygienic preparation of lactose-free milk.

.....

.....

..... [1]

(ii) Explain why the milk must be cooled in **step 3** before it makes contact with the enzymes.

.....

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.....

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..... [2]

(iii) State the name of the enzyme used to make lactose-free milk in **step 4**.

..... [1]

(iv) Suggest why the enzymes are kept in the beads in **step 4** rather than mixed as an enzyme solution with the milk.

.....

.....

..... [1]

(d) Milk is produced by mammals.

(i) Explain the advantages to newborn mammals of breast milk.

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..... [4]

(ii) Explain why breast-feeding mothers are advised to drink plenty of water and avoid excessive alcohol consumption.

.....

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.....

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..... [2]

[Total: 17]