

3 Enzymes are biological catalysts.

(a) Describe what is meant by the term catalyst.

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(b) A student investigated the effect of temperature on enzyme activity.

A starch suspension was kept at 0 °C.

Amylase solution was added to the starch suspension.

Samples of the starch and amylase mixture were tested with iodine solution at 1-minute intervals for 15 minutes.

The student recorded the time at which the starch and amylase mixture stopped turning a blue-black colour.

The student repeated this investigation at different temperatures.

Table 3.1 shows the results.

Table 3.1

temperature / °C	time at which the starch and amylase mixture stopped turning a blue-black colour / minutes
0	stayed blue-black
10	12
20	8
30	5
40	3
50	10
60	stayed blue-black

(i) Explain the results between 0 °C and 40 °C in Table 3.1.

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(ii) This investigation was repeated with protease instead of amylase.

Explain why the samples from the mixture produced a blue-black colour at every temperature.

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(c) State **one** factor, other than temperature, that affects enzyme action.

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