

Enzymes – 2021 O Level 5090

1. **Nov/2021/Paper_11/No.4**

The diagrams show an enzyme molecule and some substrate molecules.



enzyme molecule

Which diagram shows the substrate molecule for this enzyme?

A



B



C



D



2. **Nov/2021/Paper_12/No.4**

Which statement about enzymes is always correct?

- A** They change reactions to produce different end products.
- B** They change the rate of reactions.
- C** They catalyse reactions inside body cells.
- D** They catalyse reactions at body temperature.

3. Nov/2021/Paper_21/No.6

(a) Explain the 'lock and key' hypothesis of enzyme action using a **named** example.

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(b) Explain, using examples, why proteins are essential for all living organisms.

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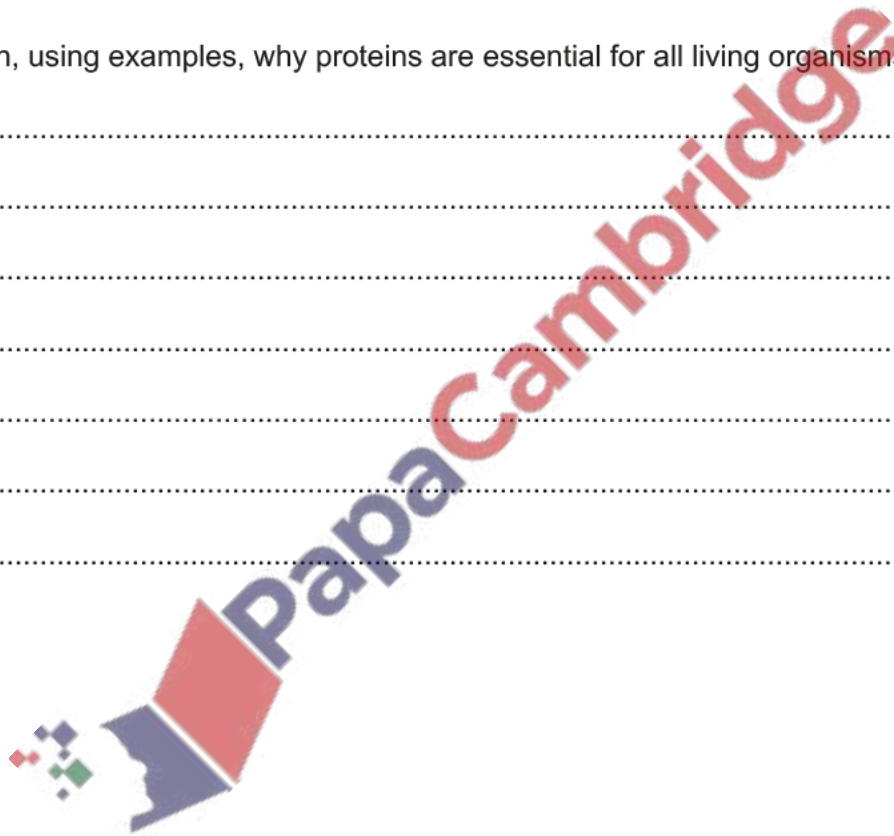
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Some laundry detergents used to wash clothes contain enzymes.

These enzymes break down the molecules that cause stains.

- (a) Suggest enzymes that may be components of a laundry detergent that will break down stains made of:

starch

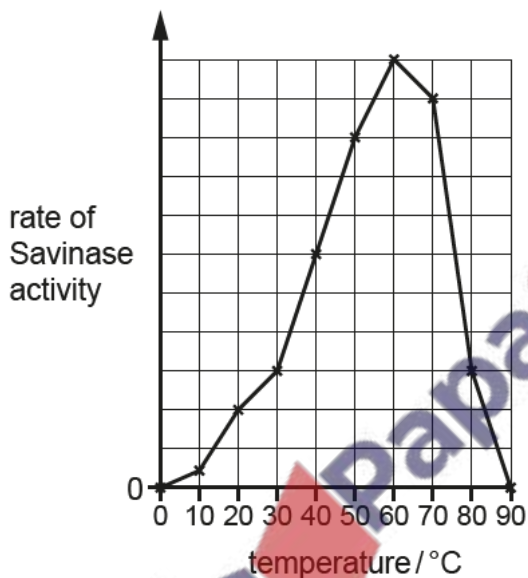
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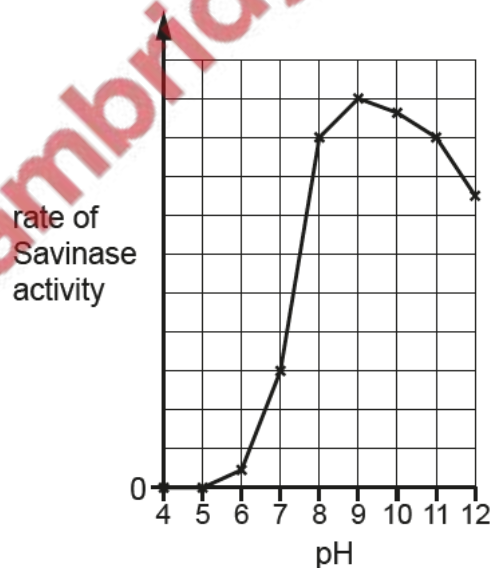
- (b) Savinase is a protease enzyme produced by genetically engineered bacteria.

The enzyme is a component of laundry detergents.

The graphs show the results of an investigation into the effects of temperature and pH on the rate of Savinase activity.



effect of temperature



effect of pH

(ii) Suggest why laundry detergents that contain Savinase also contain chemicals that dissolve to form an alkaline solution.

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(iii) After washing clothes using laundry detergents, the waste water is sometimes released into the environment.

This waste water contains inorganic phosphate ions that are also found in fertilisers.

Explain the harmful effect on aquatic life of releasing this waste water into the environment.

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5. [Jun/2021/Paper_11/No.4](#)
What is a correct description of enzymes?

- A biological catalysts made of lipids
- B biological catalysts made of proteins
- C catalysts that slow down chemical reactions and are changed by the reaction
- D catalysts that speed up chemical reactions and are changed by the reaction