

## Intermediate 2 Biology

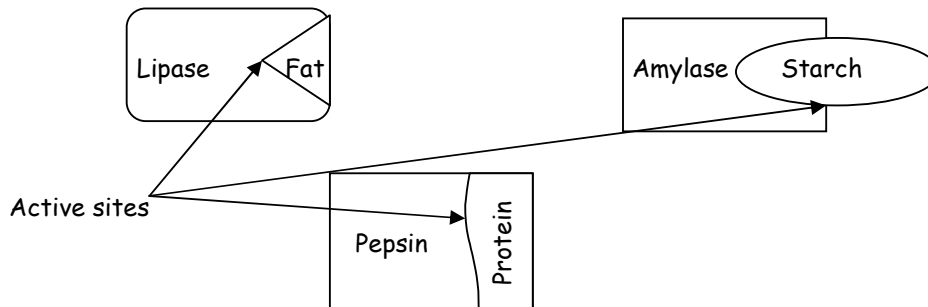
### Chapter 3 - Enzyme Action Revision Notes

#### Enzyme Facts

- ⊗ Made of PROTEIN
- ⊗ Found in all living cells
- ⊗ Are catalysts (speed-up reactions)
- ⊗ Can be recovered unaltered at the end of chemical reactions
- ⊗ Enzymes can be used over and over again
- ⊗ Lower the energy input required for a reaction to take place

#### Specificity

Each enzyme only controls one reaction. The enzyme will bind to one particular substrate (starting substance). The substrate will bind at the enzyme's active site. The substrate and the enzyme fit together like pieces of a jigsaw.



You will need to know various enzyme reactions. These are shown below:

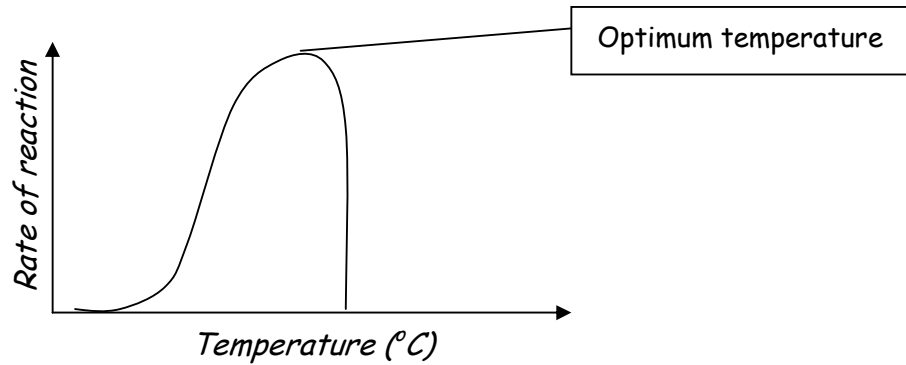
<b><u>Substrate</u></b>	<b><u>Enzyme</u></b>	<b><u>Product</u></b>
<i>Protein</i>	<i>Pepsin</i>	<i>Amino Acids</i>
<i>Fat</i>	<i>Lipase</i>	<i>Fatty Acids and Glycerol</i>
<i>Starch</i>	<i>Amylase</i>	<i>Glucose</i>
<i>Hydrogen Peroxide</i>	<i>Catalase</i>	<i>Oxygen and Water</i>
<b>Glucose-1-Phosphate</b>	<b>Potato phosphorylase</b>	<b>Starch</b>

The reactions shown in *italics* are **degradation** reactions. This is where large substrates are broken down into smaller products.

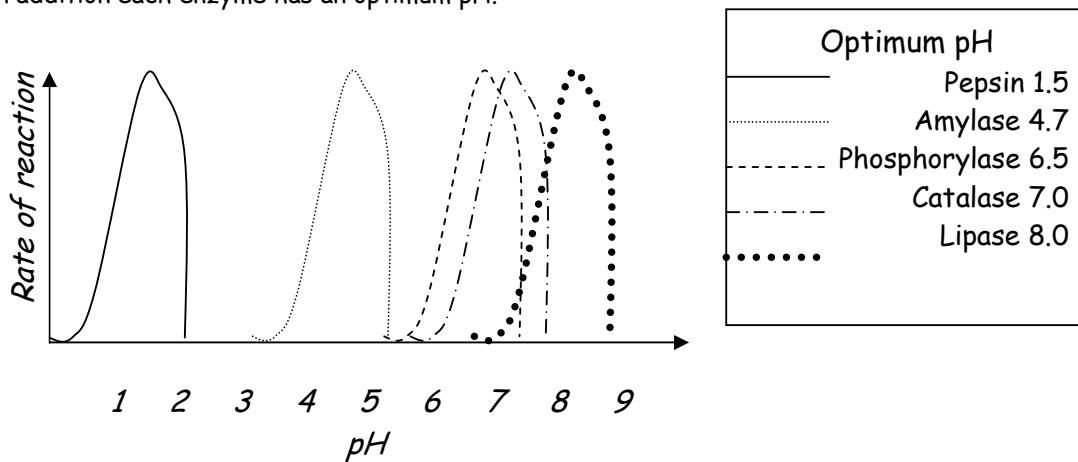
The reaction shown in **bold** is a **synthesis** reaction. This is where a small pieces of substrate are built up into a larger product.

## Optimum

Each enzyme has an optimum temperature - a temperature at which they work best. Enzymes in the human body work best at around 37°C (internal human body temperature).



In addition each enzyme has an optimum pH.



## Denaturation

An enzyme will denature when it is exposed to an incorrect pH or high temperature (usually around 50°C). This means that the shape of the enzyme (including the active site) is altered meaning it can no longer bind to its substrate.

