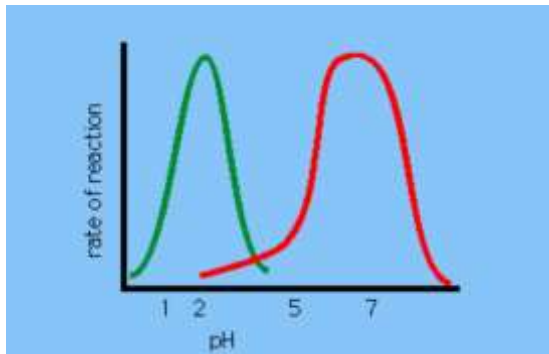


Effect of pH on enzyme activity

- Many enzymes work best in neutral conditions, but some prefer acidic and some alkaline conditions.
- Enzymes work inside and outside cells, for instance in the digestive system where cell pH is kept at 7.0 to 7.4. Cellular enzymes will work best within this pH range. Different parts of the digestive system produce different enzymes. These have different optimum pHs.



Cellular enzymes will work best within this pH range. Different parts of the digestive system produce different enzymes. These have different optimum pHs.

- The optimum pH in the stomach is pH 2 which is produced by the secretion of hydrochloric acid.

The following table gives examples of how some of the enzymes in the digestive system have different optimum pH:

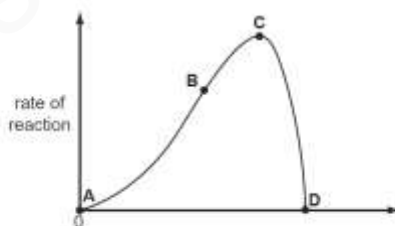
Enzyme	Optimum pH
Salivary amylase	6.8
Stomach protease (pepsin)	1.5 - 2.0
Pancreatic protease (trypsin)	7.5 - 8.0

Some application based concepts:

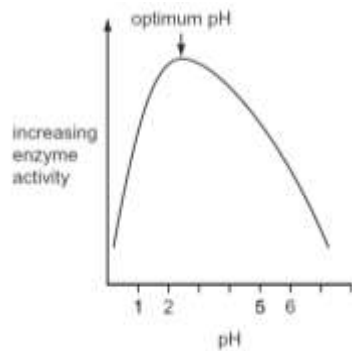
1. The following graph shows the enzyme has been denatured at point D. Because the rate of reaction is zero.

The graph shows the rate of an enzyme-controlled reaction at different temperatures.

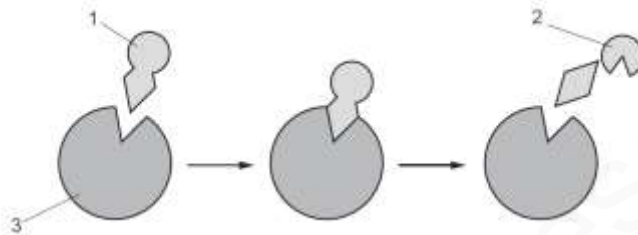
Which point on the graph shows that the enzyme has been denatured (destroyed)?



2. The following enzyme would work the best in the stomach where the pH is as low as 2



3. In the following diagram, the substrate is shown by the number 3 and substrate by the number 1:



4. The following graphs show that each enzyme works best at a different optimum pH

The graph shows the effect of pH on the rate of reaction of three different enzymes.

