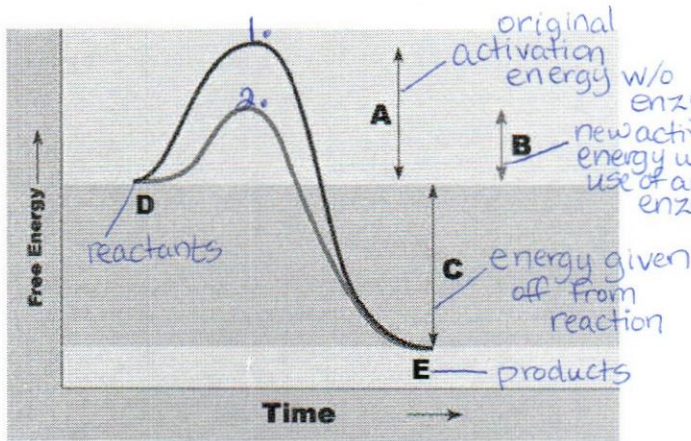


Enzymes - commonly end in -ase
 - are named for the substrate they work on.

Type of Macromolecule: Protein
 Enzymes are an example of a Catalyst
 Purpose: To make a chemical reaction occur faster by lowering the activation energy (energy needed to turn reactants into products).
 A catalyst is anything that speeds up a chemical reaction



Label each part of the graph (A-E).
 Explain the difference between each line in the graph.

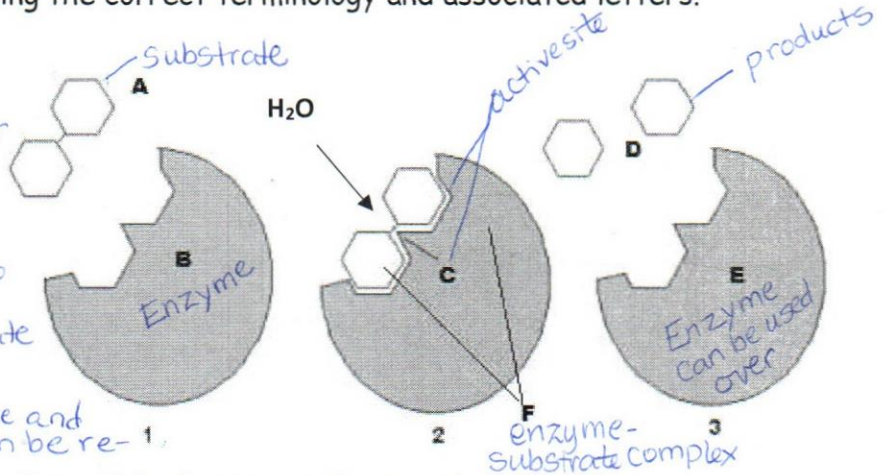
1. Dark line = represents energy needed to turn reactants into products without an enzyme.
2. Lighter line = represents energy needed to turn reactants into products with an enzyme.

Is this reaction endergonic or exergonic?

exergonic because energy is given off.

Describe what is happening at all stages using the correct terminology and associated letters.

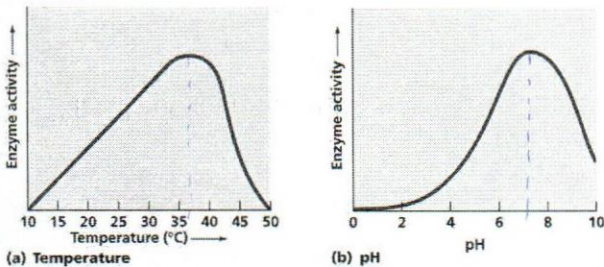
1. Substrate is the reactant and needs to turn into product. Enzyme will help this happen faster by doing it at a lower energy. Enzyme has an active site that matches shape of substrate.
2. Substrate and enzyme bind to form an enzyme-substrate complex. While here, the substrate is changing into products.
3. Products are released by enzyme and enzyme is unchanged and can be re-used on another substrate.



What type of reaction is occurring here, dehydration synthesis or hydrolysis?

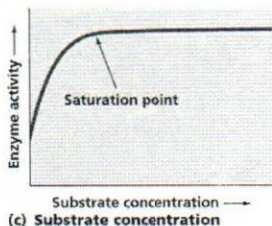
Hydrolysis - one large molecule breaking into 2 smaller ones.

Explain the graphs in terms of impact on the activity of the enzyme:



Graph A: At cold temperatures, enzyme activity is very slow. As temperature increases slightly, the enzyme works faster. At 37°C, the optimum temperature is reached where enzyme is at peak performance. After that, enzyme begins to denature and not work so well.

Graph B: This enzyme works best at pH of 7. Below and above 7 the active site is denatured + enzyme doesn't work.



Graph C: Even if you have working enzymes if you give the enzymes more and more substrates to work on, at some point there are not enough enzymes (they are saturated) and cannot produce products any faster.