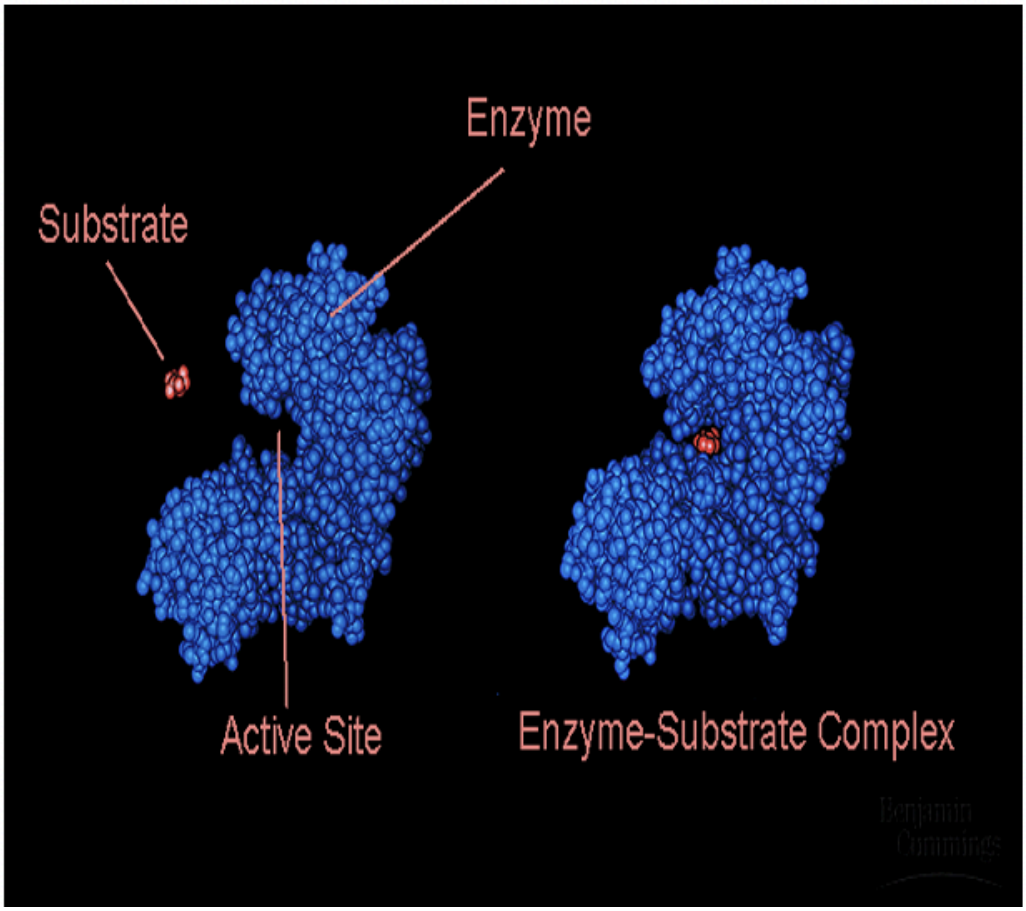
Enzymes

Catalysts:
A catalyst is a chemical that speeds up chemical reactions.

Enzymes:
Enzymes are **proteins** that speed up chemical reactions.
Therefore, we call enzymes biological catalysts because they speed up reactions that occur in living organisms.

Structure of Enzymes
- Each enzyme has a special shape to match a specific substrate. (Similar to a lock and key, where the enzyme is the lock and the substrate is the key)
- The substrate (reactant) attaches to the enzymes active site. This is where the reaction occurs.

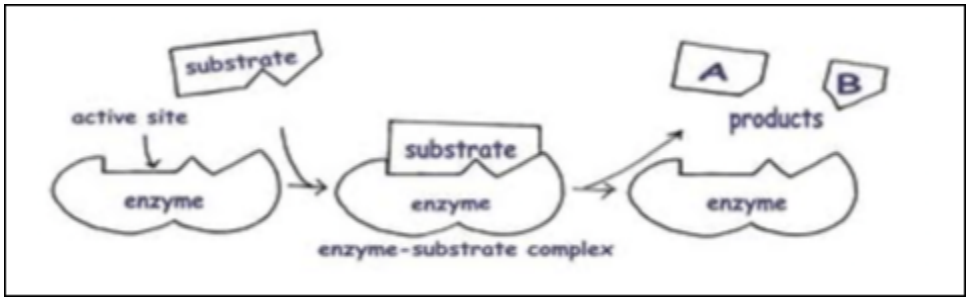
Diagram



Enzymes

Example:
Your liver cells contain an enzyme (catal**ase**) to break down hydrogen peroxide into water and oxygen gas.

$H_2O_2 \rightarrow H_2O + O_2$



Features of Enzymes

- At the end of the reaction, the enzyme remains unchanged. Therefore, it can be used again to speed up other chemical reactions
- Without enzymes, most of the reactions in a cell would proceed too slowly to maintain life

Competitive Inhibitors

- Compete for an enzymes active site
- Sometimes they mimic the shape of the substrate
- If they bind to an enzyme, they will prevent (inhibit) other substrates from binding to the enzyme
- Example) Poisons like cyanide and arsenic act this way (leads to death if not treated immediately)

Homework

Read textbook pages 51-54
Answer questions #1b, 2, 4 and 5 on page 55