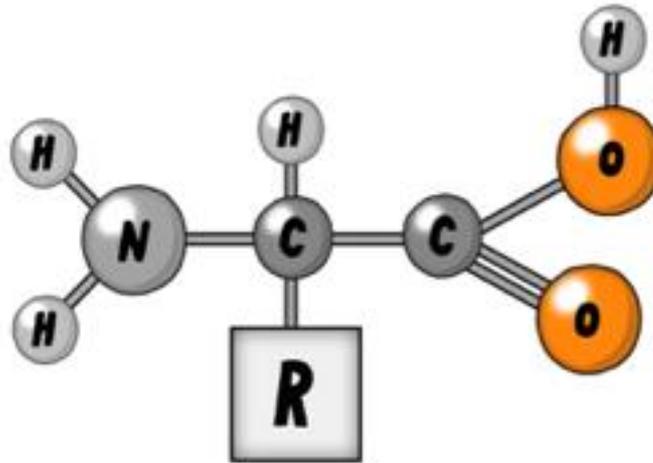
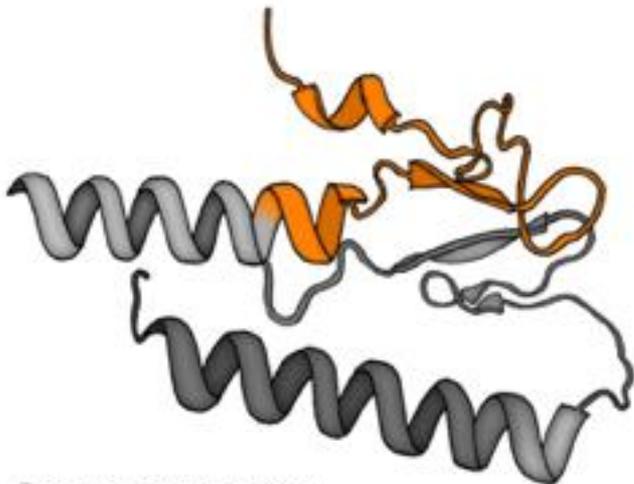
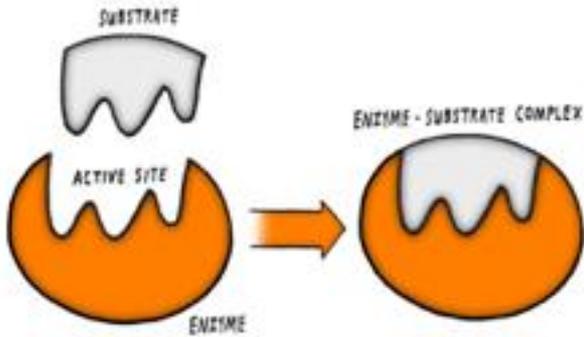


OCR A Level
Foundations in biology
Module 2

THINK IT!



Carbohydrates:

- Cellulose is made of long chains of β -glucose molecules. Parallel chains are then cross linked with weak hydrogen bonds yet cellulose is a strong material. Account for this apparent paradox.
- Different polymers have different functions. Describe, using examples, how the structure of different polymers relate to their function.
- “You can test for glucose using the Benedict’s test”. Evaluate this statement.

Lipids:

- Fatty acids can be saturated or unsaturated. Use this information to explain why oils are liquids at room temperature.
- Phospholipids are amphipathic. This property of phospholipids helps determine the structure of cell membranes. Discuss this statement.
- Margarine advertises claim to be healthy as the product is “Low in Cholesterol” Evaluate the accuracy of this claim.

Proteins:

- Discuss, using examples, how the structure of a protein is related to its function.
- In a particular protein molecule, one amino acid is replaced by another. Suggest why this may or may not lead to a change in the tertiary structure of the protein.
- The charge on a protein is influenced by pH and can affect the way a protein behaves. Suggest consequences of a change of charge on a protein.
- Suggest why contact lens solution contains proteases.

Enzymes:

- Biosensors use enzymes to detect the presence of a particular substance. Suggest how a biosensor containing glucose oxidase can measure blood glucose levels in diabetics.
- Suggest how enzyme inhibition is used in chemotherapy.
- Cyanide is a poison that interferes with the respiratory pathway. Discuss possible mechanisms by which cyanide could work.
- Discuss the advantages of enzyme immobilisation compared with using enzymes in solution.

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ThinkIT!

Tell me more! And what?

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Cell structure:

- How many cells of diameter $50\mu\text{m}$ would fit side by side in 1mm ?
- How has the microscope enhanced our knowledge of cell structure?
- Construct a key based on structural differences to identify different cell organelles.
- Compare SEM and TEM and describe the limitations of each.

Nucleic acids:

- Compare and contrast an RNA molecule and a DNA molecule.
- It is not possible for two purine nucleotides to join together. Suggest why.
- The strands of a DNA molecule are described as being anti-parallel. Explain what this term means.
- Microarrays are also called DNA chips. Identify the basic principle by which microarrays work.

Cell division:

- Give some examples of tissues in which mitosis is less frequent, or practically absent?
- Suggest why chromosome non-disjunction can lead to conditions such as Down Syndrome.
- Summarise the evidence for the semi-conservative replication of DNA.

Water:

- Water is a dipole molecule. Explain the term ‘dipole molecule’. Suggest why this property is so important in water and consequently how it supports life on earth.
- Raj: “Sweating cools you down”.
Max: “Sweating on its own doesn’t cool you down, something else has to happen too.” Use the properties of water to justify Max’s comment.