

# CIE Biology IGCSE

## 4 - Biological Molecules

### Flashcards

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What chemical elements are present in carbohydrates?



What chemical elements are present in carbohydrates?

Carbon, hydrogen, oxygen (C,H,O)



# What chemical elements are present in lipids?



What chemical elements are present in lipids?

Carbon, hydrogen and oxygen (C,H,O)



# What chemical elements are present in proteins?



What chemical elements are present in proteins?

Carbon, hydrogen, oxygen, nitrogen and sulfur (C,H,O,N,S)



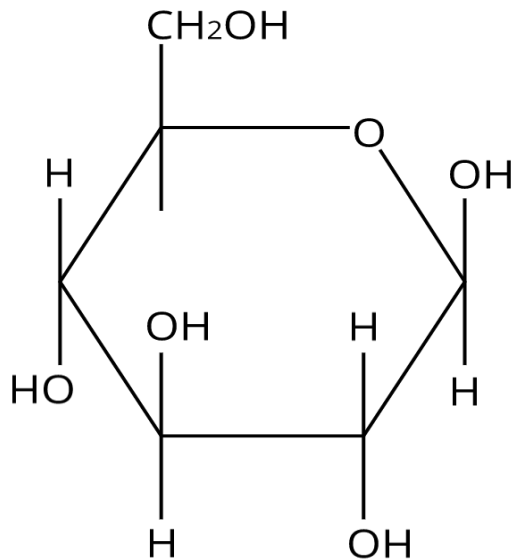
What smaller molecules are starch and glycogen made from?





What smaller molecules are starch and glycogen made from?

Glucose

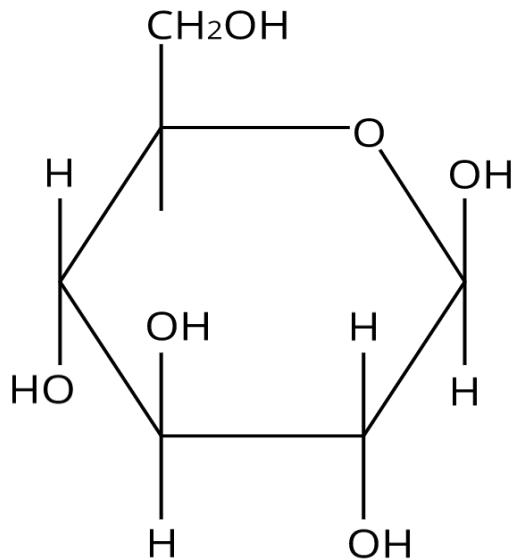


What smaller molecule is cellulose made of?



# What smaller molecule is cellulose made from?

## Glucose

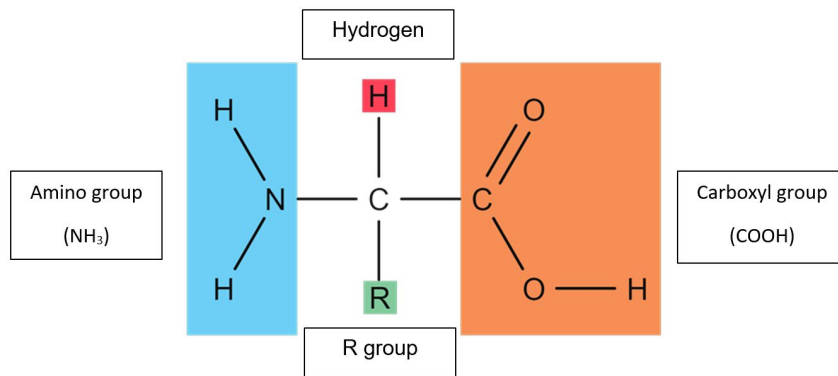


# What smaller molecules are proteins made of?



# What smaller molecules are proteins made of?

## Amino acids

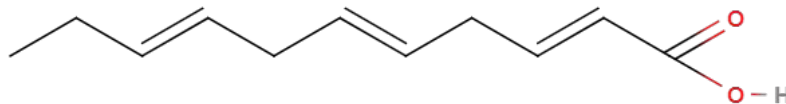


What smaller molecules are fats and oils made from?

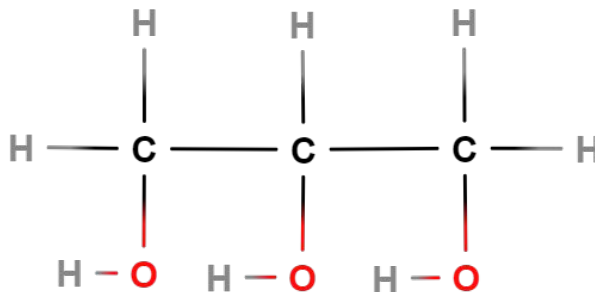


What smaller molecules are fats and oils made from?

Fatty acids



Glycerol



# How do you test for starch?





# How do you test for starch?

## Add iodine to the sample

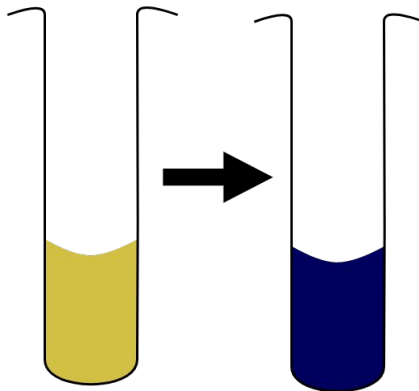


What will you observe in a positive test for starch?



What will you observe in a positive test for starch?

The yellow/brown solution turns blue/black



# How do you test for reducing sugars?



## How do you test for reducing sugars?

- Add a few drops of Benedict's solution
- Warm in a water bath for 3 minutes at about 80 degrees

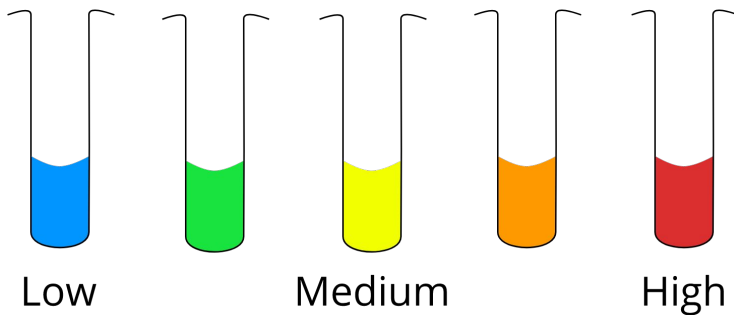


What will you observe in a positive test for reducing sugars?



What will you observe in a positive test for reducing sugars?

The more reducing sugar present, the closer to red the colour is



# How do you test for proteins?





# How do you test for proteins?

Add equal volumes of Biuret A (copper sulfate) and Biuret B (sodium hydroxide) to the sample and shake

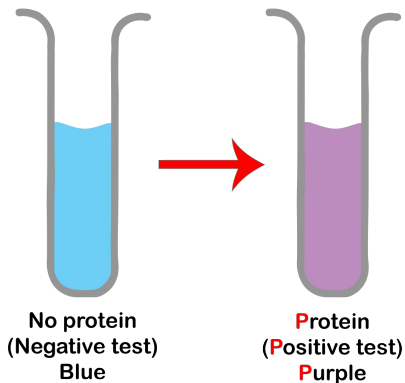


What will you observe in a positive test for protein?



What will you observe in a positive test for protein?

The solution turns from blue to purple



# How do you test for lipids?



## How do you test for lipids?

- Add  $2\text{cm}^3$  of ethanol to the sample
- Leave to dissolve
- Add  $2\text{cm}^3$  of distilled water to the sample



What will you observe in a positive test for lipids?



What will you observe in a positive test for lipids?

A cloudy white emulsion will form



# How do you test for Vitamin C?





How do you test for Vitamin C?

Add DCPIP to the solution drop by drop until the solution **permanently** changes colour

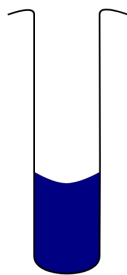


What will you observe in a positive test  
for Vitamin C?



What will you observe in a positive test for Vitamin C?

The solution will turn the DCPIP from dark blue to colourless **permanently**



How does the sequence of amino acids  
affect the protein produced?  
(Higher/Supplement)



How does the sequence of amino acids affect the protein produced? (Higher/Supplement)

The different amino acids and their structures can determine the shape, size, properties of the protein and how it folds in different ways



Give 2 functions of proteins  
(Higher/Supplement)



Give 2 functions of proteins (Higher/Supplement)

Antibodies



Enzymes



# Describe the structure of DNA (Higher/Supplement)





## Describe the structure of DNA (Higher/Supplement)

- It is a polymer made of many nucleotide monomers
- It is made of 2 strands in the shape of a double helix
- Each strand contains bases (A, T, C, G)
- The 2 strands are linked between the bases



Give the 4 bases in DNA  
(Higher/Supplement)



Give the 4 bases in DNA (Higher/Supplement)

A, T, C and G



# How do the bases in DNA pair up? (Higher/Supplement)



How do the bases in DNA pair up  
(Higher/Supplement)

A always pairs with T

C always pairs with G



Give one use of water in the body



Give one use of water in the body

Water is used as a solvent in the body



Give 3 processes in which water is used  
as a solvent (Higher/Supplement)





Give 3 processes in which water is used as a solvent  
(Higher/Supplement)

- Digestion
- Excretion
- Transport

