

# A-level Biology – Preparatory work 2025

We are really pleased that you have enrolled onto A-level Biology. You are required to bring these completed tasks to your first Biology lesson. The topics you will cover will link in with a range of Biology topics covered within the first year such as digestion, gas exchange and biochemistry.

At college you will need to start taking responsibility for your own learning and in Biology will be required to read notes and sometimes complete tasks before lessons. The aim of this is for you to refresh your memory of some of the biology you learned at GCSE and to introduce you to the style of learning you will encounter on the A-level course.

## Task 1: Enzymes of Digestion

At GCSE, you will have learned the names of some of the enzymes involved in digestion. At A Level, we look at a wider range of enzymes involved in the process.

**Digestion from Miss Estruch:**

<https://www.youtube.com/watch?v=eV9Y2xJ8MNc>

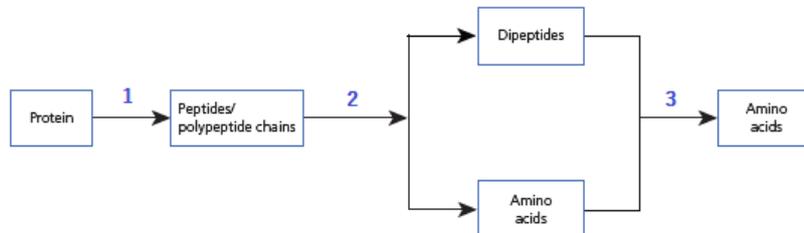
**Notes on Enzymes in Digestion from Save my Exams:**

<https://www.savemyexams.com/a-level/biology/aqa/17/revision-notes/3-exchange-and-transport/3-3-digestion-and-absorption/3-3-2-enzymes-in-digestion/>

Watch the video above and use notes above to answer the following questions.

1.
  - a. Name 3 types of food that contain large quantities of starch.
  
  
  
  
  
  
  
  
  
  
  - b. Name the two enzymes involved in the digestion of starch and the products of each enzyme catalysed reaction.
  
  
  
  
  
  
  
  
  
  
  - c. State the region (or regions) of the digestive system where these enzymes **produced** and where are they **active**.
  
  
  
  
  
  
  
  
  
  
  - d. State the name of biochemical reaction that these enzymes catalyse.
  
2.
  - a. Name 3 types of food containing large quantities of protein.

- b. The image below shows the products of each stage of protein digestion. Name the type of protease enzymes located in positions 1, 2 and 3, involved in the digestion of proteins.



- c. State the region (or regions) of the digestive system where these enzymes are **produced** and where they are **active**.

- d. State the name of the biochemical reaction these enzymes catalyse.

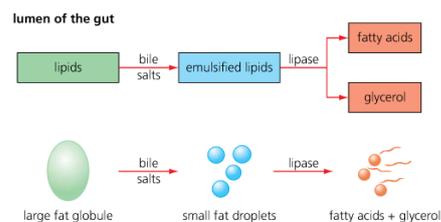
- e. Describe the difference between the action of an endopeptidase and an exopeptidase.

- f. State the function of hydrochloric acid in the stomach.

3.

- a. State three types of food containing large quantities of lipids.

- b. The image below shows a summary of the emulsification and chemical digestion of lipids.



- c. Describe the role of **bile salts** during the process of emulsification.
  
- d. Name the enzyme involved in the chemical digestion of lipids and state the products of digestion.
  
- e. State the region (or regions) of the digestive system where this enzyme is produced and where it is active.
  
- f. State the type of biochemical reaction that this enzymes catalyses.

## Task 2: Biological Molecules

You have looked at how large biological molecules are broken down into smaller molecules in digestion. Now let's have a closer look at the molecules themselves.

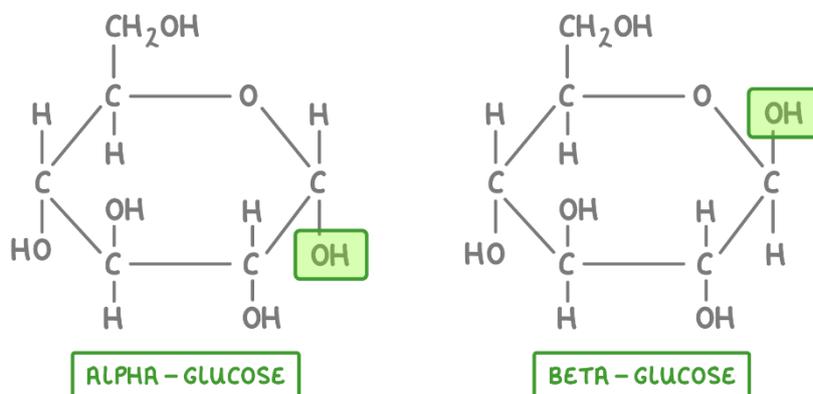
### Notes on Biological Molecules from Save my Exams:

<https://www.savemyexams.com/a-level/biology/aqa/17/revision-notes/1-biological-molecules/1-1-biological-molecules-carbohydrates/1-1-1-biological-molecules-key-terms/>

Use the menu on the left to navigate to the correct section of the notes.

1. Define polymer.
  
2. Below are the structures of two forms of the monosaccharide glucose-  $\alpha$ -glucose and  $\beta$ -glucose. The green boxes highlight the key difference between them.

On scrap paper, practice drawing out the structures until you can do them from memory.

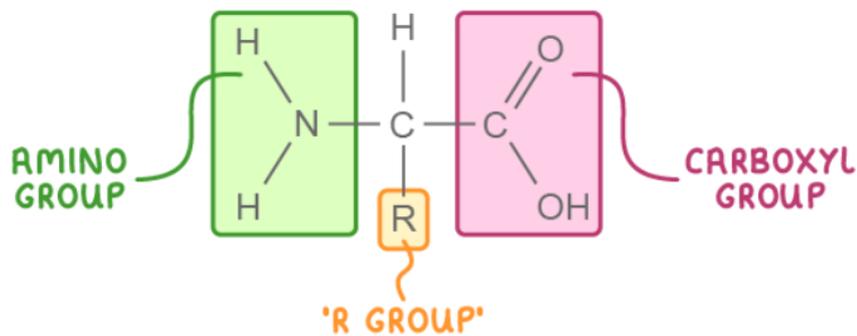


3. Using the notes above, complete the table below:

Polysaccharide	Monomer it consists of	Types of bonds found within it	Key structural features
Glycogen			
Starch			
Cellulose			

4. Name the monomer that makes up a protein.

5. There are 20 different amino acids that vary in their structure. You don't need to know them all, but you do need to know the generic structure of an amino acid. The structure is shown below. The three main groups of the amino acid are highlighted. "R" represents the part that changes from one amino acid to another. Like you did with the glucose structures, draw out the structure until you can do it from memory.



## Task 3: Features of Exchange Surfaces

In Biology, substances move between organisms and their environment by diffusion such as gases (like oxygen and carbon dioxide) or nutrients (like fatty acids). An organism's survival relies on its ability to exchange these substances quickly enough.

### Human Gas Exchange System from Miss Estruch:

<https://www.youtube.com/watch?v=Wyer9wvaxmM>

### Notes on Exchange Surfaces from Save my Exams:

<https://www.savemyexams.com/a-level/biology/aqa/17/revision-notes/3-exchange-and-transport/3-1-adaptations-for-gas-exchange/3-1-3-adaptation-to-facilitate-exchange/>

1. Three factors that affect the rate of diffusion are the surface area of the exchange surface, the thickness of the exchange surface and the concentration gradient between the two sides of the exchange surface. Complete the table using the words "increase" or "decrease" to show how you would change these factors to achieve each rate of diffusion.

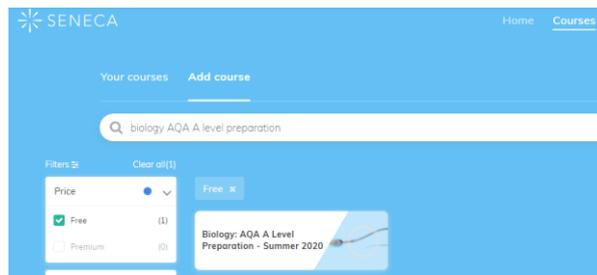
	Fast Diffusion	Slow Diffusion
Surface Area		
Thickness of Surface		
Concentration Gradient		

If you need a reminder- <https://www.youtube.com/watch?v=QW9GpeeKhT8>

2. State how optimal diffusion rates are achieved in the mammalian gas exchange system, considering each of the factors mentioned above.

## If you have struggled with any of the above:

If you have used Seneca Learning for any of your GCSE subjects, then you can simply log into your account search for the following course:



...or click on the link below:

<https://app.senecalearning.com/dashboard/courses/add?Price=Free&text=biology+AQA+Alevel+preparation>

If you do not have an account, you can enrol for free – see the link below:

<https://senecalearning.com/en-GB/>

- To refresh your knowledge gained during your GCSE biology Course, please complete section 1.1 GCSE Refresher course: (this should take 15-25 minutes)