

A level Biology will use your knowledge from GCSE and build on this to help you understand new and more demanding ideas. Complete the following tasks to make sure your knowledge is up to date and you are ready to start studying:

## **Cells**

The cell is a unifying concept in biology, you will come across it many times during your two years of A level study. Prokaryotic and eukaryotic cells can be distinguished on the basis of their structure and ultrastructure. In complex multicellular organisms cells are organised into tissues, tissues into organs and organs into systems. During the cell cycle genetic information is copied and passed to daughter cells. Daughter cells formed during mitosis have identical copies of genes while cells formed during meiosis are not genetically identical

Read the information on these websites (you could make more Cornell notes if you wish):

<http://www.s-cool.co.uk/a-level/biology/cells-and-organelles>

<http://www.bbc.co.uk/education/guides/zvjycdm/revision>

And take a look at these videos:

<https://www.youtube.com/watch?v=gcTuQpuJyD8>

<https://www.youtube.com/watch?v=L0k-enzoeOM>

<https://www.youtube.com/watch?v=qCLmR9-YY7o>

## **Task:**

**Produce a one page revision guide to share with your class in September summarising one of the following topics: Cells and Cell Ultrastructure, Prokaryotes and Eukaryotes, or Mitosis and Meiosis.**

Whichever topic you choose, your revision guide should include:

Key words and definitions

Clearly labelled diagrams

Short explanations of key ideas or processes.

## **Biological Molecules**

Biological molecules are often polymers and are based on a small number of chemical elements. In living organisms carbohydrates, proteins, lipids, inorganic ions and water all have important roles and functions related to their properties. DNA determines the structure of proteins, including enzymes. Enzymes catalyse the reactions that determine structures and functions from cellular to whole-organism level. Enzymes are proteins with a mechanism of action and other properties determined by their tertiary structure. ATP provides the immediate source of energy for biological processes.

Read the information on these websites (you could make more Cornell notes if you wish):

<http://www.s-cool.co.uk/a-level/biology/biological-molecules-and-enzymes>

<http://www.bbc.co.uk/education/guides/zb739j6/revision>

And take a look at these videos:

<https://www.youtube.com/watch?v=H8WJ2KENIK0>

<http://ed.ted.com/lessons/activation-energy-kickstarting-chemical-reactions-vance-kite>

## **Task:**

**Krabbe disease occurs when a person doesn't have a certain enzyme in their body. The disease effects the nervous system. Write a letter to a GP or a sufferer to explain what an enzyme is.**

Your poster should:

Describe the structure of an enzyme

Explain what enzymes do inside the body

### **Scientific and Investigative Skills**

As part of your A level you will complete a practical assessment. This will require you to carry out a series of practical activities as well as planning how to do them, analysing the results and evaluating the methods. This will require you to: use appropriate apparatus to record a range of quantitative measurements (to include mass, time, volume, temperature, length and pH), use appropriate instrumentation to record quantitative measurements, such as a colorimeter or photometer, use laboratory glassware apparatus for a variety of experimental techniques to include serial dilutions, use of light microscope at high power and low power, including use of a graticule, produce scientific drawing from observation with annotations, use qualitative reagents to identify biological molecules, separate biological compounds using thin layer/paper chromatography or electrophoresis, safely and ethically use organisms, use microbiological aseptic techniques, including the use of agar plates and broth, safely use instruments for dissection of an animal organ, or plant organ, use sampling techniques in fieldwork.

#### **Task:**

##### **Produce a glossary for the following key words:**

accuracy, anomaly, calibration, causal link, chance, confounding variable, control experiment, control group, control variable, correlation, dependent variable, errors, evidence, fair test, hypothesis, independent, null hypothesis, precision, probability, protocol, random distribution, random error, raw data, reliability, systematic error, true value, validity, zero error,



3. Ecologists regularly study habitats to measure the species present and the effect of any changes. One team of ecologists investigated the habitat shown in the picture below:

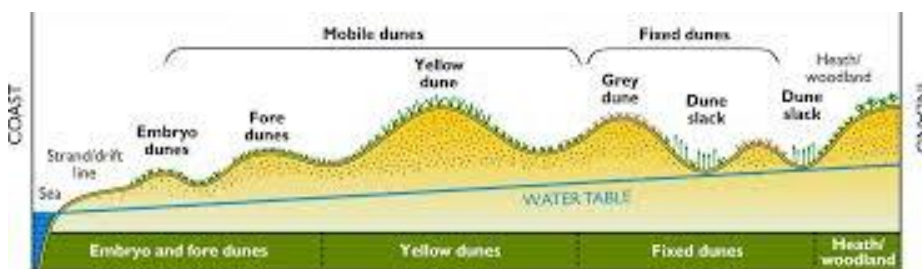


Image taken from <http://www.macaulay.ac.uk/soilquality/Dune%20Succession.pdf>

a) Define the following keywords:

i) Population

.....

ii) Community

.....

(2)

b) Give an example of one biotic factor and one abiotic factor that would be present in this habitat

Biotic: .....

Abiotic: .....

(2)

c) Describe how the ecologists would go about measuring the species present between the coast and the inland.

.....  
 .....  
 .....  
 .....  
 .....  
 .....

(6)

4. Every living organism is made of cells.



Image taken from <http://prestigebox.com/worksheet/label-an-animal-cell-worksheet>

a) Label the following parts of the animal cell:

- 2 .....
- 5 .....
- 8 .....

(3)

b) Describe how is the structure of the cell membrane related to its function?

.....  
 .....  
 .....

(3)

5. A medical research team investigated how quickly the body deals with glucose after a meal. They studied the blood glucose concentration of people who exercised versus those who did not. Here are their results:

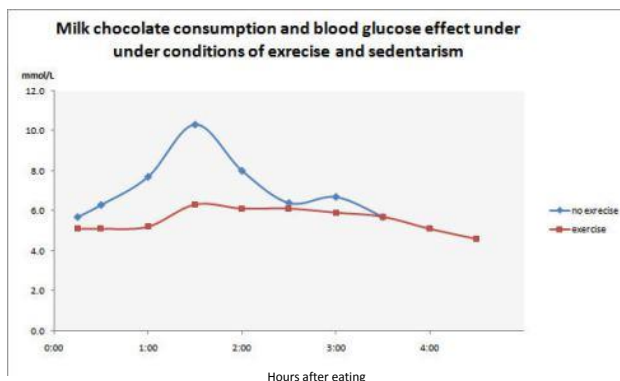


Image taken from <https://memoirsofanamnesic.wordpress.com/category/blood-glucose/>

a) What organ in the body regulates blood glucose concentration?

.....  
 (1)

b) Explain how the stages that would bring about a return to normal blood glucose concentrations.

.....

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.....

.....

(4)

c) Name one variable the researchers will have controlled.

.....

(1)

d) The researchers made the following conclusion:

**“Blood glucose returns to normal values for all people after 4 hours”**

To what extent do you agree with this conclusion.

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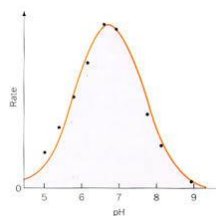
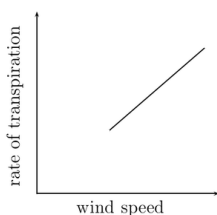
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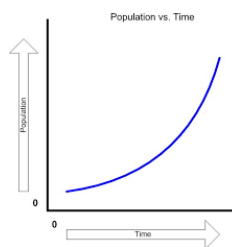
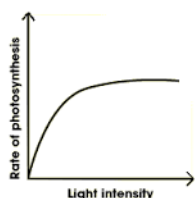
(3)

6. Scientists need to be able to interpret data in graphs to decide if there are trends in the results. For each graph below, describe the trend.



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.....(4)

Images taken from: <http://www.everythingmaths.co.za/science/lifesciences/grade-10/05-support-and-transport-systems-in-plants/images/56aff2f9b6c5b041688f745ca928990c.png>  
<http://www.bbc.co.uk/staticarchive/afa3f2b16b4d58d077943c96929c9a4020fea83a.gif>  
<http://www.rpi.edu/dept/chem-eng/Biotech-Environ/Projects00/temph/enzyme.html>  
<http://www.myearthwatchexperience.com/Essential%20Ecology.htm>