

7.2.3 Decomposition

AQA GCSE Biology (Higher) Question and answer notes

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How to use these notes

These notes cover everything you need to know for this part of the specification. They have been written in question-answer format to make them easier for you to study from.

In order to study successfully, I recommend you do the following for each question and answer:

- Read it carefully and make sure you **understand** it.
- **Memorise** the answer.
- **Practice** applying your understanding to past exam questions.

A good way to memorise information is to use **retrieval practice**. This is when you practise retrieving information from your memory. You could do this by making a flashcard for each question with the question on one side and the answer on the other. Or you could use a flashcard app. Alternatively, use a sheet of paper to cover up the answer so you can only see the question. Try to answer the question and then check how you did.

You should practise retrieving each answer from your memory until you can do it perfectly. Even once you can retrieve the answer perfectly, your ability to retrieve it will probably fade as time passes without practising. Therefore you will need to keep going back to the questions that you have previously mastered and practising them again. However, each time you re-learn the answer, the memory will be stronger and will last longer than the time before.

What is decomposition?

Decomposition is when dead organisms, or waste material such as faeces, urine and fallen leaves, are broken down by organisms such as bacteria and fungi.

What is the word for organisms that carry out decomposition?

Organisms that carry out decomposition are called 'decomposers'.

Which factors affect the rate of decomposition?

The rate of decomposition is affected by:

- Temperature
- Moisture level (the amount of water present)
- The availability of oxygen

Describe the effect of temperature on the rate of decomposition.

As the temperature increases, the rate of decomposition increases. However, if the temperature gets too high, decomposition stops completely.

Explain the effect of temperature on the rate of decomposition.

Decomposers use enzymes to carry out decomposition.

As the temperature increases, the enzymes and their substrates have more kinetic energy so they collide more often, meaning that the rate of decomposition increases.

However, if the temperature gets too high, the enzymes become denatured, which means that decomposition stops.

Describe the effect of moisture level on the rate of decomposition.

The higher the moisture level, the faster the rate of decomposition.

Explain the effect of moisture level on the rate of decomposition.

Decomposers are living organisms and therefore they need water. For example, water makes it easier for them to digest food. Therefore, higher moisture levels result in a faster rate of decomposition.

Describe the effect of the availability of oxygen on the rate of decomposition.

The greater the amount of oxygen available, the faster the rate of decomposition.

Explain the effect of the availability of oxygen on the rate of decomposition.

Most decomposers carry out aerobic respiration (respiration using oxygen) rather than anaerobic respiration (respiration without oxygen). Higher oxygen availability means that the decomposers have more oxygen for aerobic respiration, which results in a higher rate of decomposition.

How do gardeners and farmers use decomposition?

Gardeners and farmers place dead living things and waste material in compost heaps. They try to create optimal conditions for decomposition in the compost heap (warm, lots of moisture, lots of oxygen). This causes the material in the compost heap to decompose, forming a substance called compost. Compost contains high levels of nutrients, and can be added to soil to act as a fertiliser for growing garden plants or crops.

What gas is produced when decomposition takes place in anaerobic conditions (without oxygen)?

When decomposition takes place in anaerobic conditions, methane gas is produced.

What is a biogas generator?

A biogas generator is a special tank in which decomposition takes place in anaerobic conditions (without oxygen). This results in the production of methane gas, which is then collected from the biogas generator. The methane gas can then be used as a fuel.