



Describe how you would prepare an uncontaminated culture of bacteria on agar jelly in a Petri dish. Explain the reason for each step you describe. (6)

To describe and explain:

To give an ordered account of a process and link all points logically.

Connectives: First, next, last, due to, therefore, consequently, as a result, if, since, because, ...





B1.1 Growing bacteria

June 20??

0 marks: No relevant content.

1-2 marks: There is a brief description of at least one of the stages (pre-inoculation, inoculation, post-inoculation).

Poor SPAG.

3-4 marks: There is a simple description of at least two stages and an explanation of at least one of the steps. Some SPAG errors.

5-6 marks: There is a clear description of all three stages with an explanation for at least two steps. Almost faultless SPAG.

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The first stage of growing bacteria on agar jelly in a Petri dish is pre-inoculation. In this stage the Petri dish and agar are sterilised to kill any unwanted bacteria. This is achieved by passing the inoculation loop through a flame so that it becomes sterile. The second process is called inoculation. The now sterile loop is dipped in a suspension of bacteria which are transferred to the agar. The lid of the Petri dish is replaced quickly to prevent microbes from the air entering. The final step is called post-inoculation. The Petri dish is sealed with tape to prevent microbes from the air entering and contaminating the culture. It is important to not seal the dish all the way to ensure oxygen can enter. Otherwise harmful anaerobic bacteria would grow. The Petri dish is then incubated to allow the bacteria to grow.



*Explain why numbers of antibiotic-resistant bacteria have increased in recent times. (4)*

*To explain:*

*To link all points logically.*

*Connectives:*

*Due to, therefore, consequently, as a result,*

*if, since, because, . . .*





## *B1.1 Pathogens*

*June 20??*

*One bacterium in a patient undergoes a random gene mutation that makes it resistant to antibiotics (1).*

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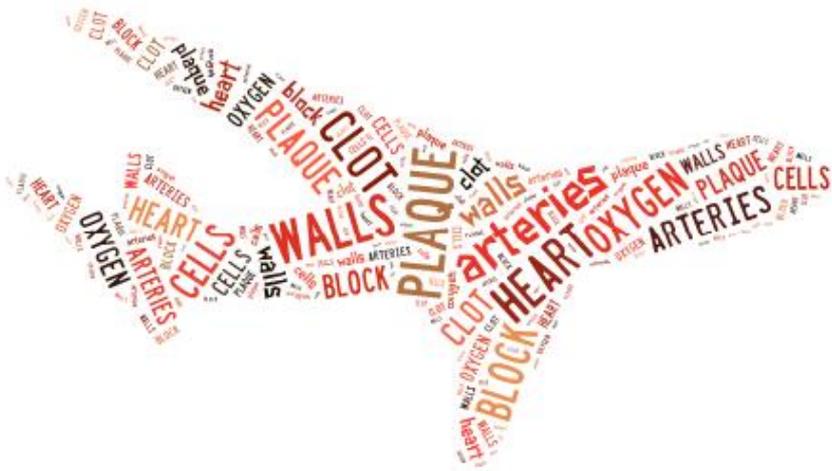
The patient starts taking antibiotics which kill the bacteria that make the patient ill. The resistant bacterium is not killed (1).

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*This bacterium will now grow rapidly. It divides and clones itself (asexual reproduction) (1).*

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As a result there is now a population of anti-biotic resistant bacteria (1).



Describe how high levels of blood cholesterol can lead to a heart attack. (5)

To describe:

To give an ordered account of a process, method, etc.

Connectives:

First, next, finally,...





B1.1 Diet and Exercise

June 20??

At high level of blood cholesterol increases the risk of developing plaque (1)

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*in the walls of the arteries that supply the heart muscle with blood (1).*

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The presence of plaque increases the chance of a blood clot forming which blocks the artery (1).

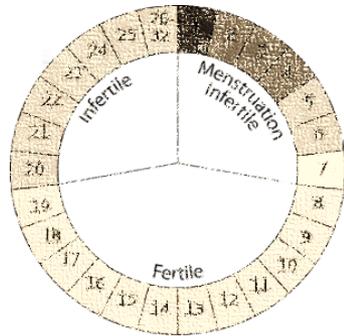
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*This will prevent oxygen carrying blood to reach the heart muscle which means that some of the*

*heart cells are destroyed (1).*

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*The affected area of the heart muscle will no longer function and the person suffers a heart
attack (1).*



The combined oral contraceptive pill (which contains both oestrogen and progesterone) is reported to have a 99.99% success rate, if taken correctly and consistently. It should be taken around the same time each day, but is still effective if taken up to 12 hours late. The combined pill increases the risk of blood clots and cannot be taken if breast-feeding.

The progesterone-only pill has to be taken at the same time within up to 3 hours every day to be effective. Its success rate is 99.95% if taken correctly. This type of contraceptive pill can lead to irregular bleeding, but it can be taken if breast feeding or the woman has a history of blood clots.

Evaluate the use of the two types of oral contraceptive pill. (6)

To evaluate

To use the information supplied and your own knowledge to consider evidence for and against. To give a justified conclusion.

Connectives:

Whereas, alternatively, unlike, equally, unless, if, such as, however, this means that...





B1.2 Controlling fertility

June 20??

0 marks: No relevant content.

1-2 marks: A simple comparison between the two pills has been attempted. Poor SPAG.

3-4 marks: Two clear comparisons are made between the two types of pill. A conclusion has been attempted. Some SPAG errors.

5-6 marks: At least three clear, detailed comparisons are made between the two types of pill. A justified conclusion has been reached. Almost faultless SPAG.

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The combined pill has a higher success rate than the progesterone-only pill so it is overall the more effective pill. Because the combined pill can be taken up to 12 hours late, unlike the progesterone-only tablet which has to be taken within a 3 hour window every day, it is easier to fit the combined pill into a busy life style. Unfortunately, women on the combined pill have a higher risk of developing blood clots which could lead to heart attacks. Breast feeding women also have a higher risk of falling pregnant again quickly unless they decide to switch to the progesterone-only pill while still breast feeding.

Overall, I believe that the combined pill / progesterone-only pill is best for. . . . (pick out one of the above points and develop it in more detail. Describe who exactly benefits and what the benefits are)



*Explain how a plant shoot bends towards the light as it grows on a windowsill. (4)*

*To explain:*

*To link all points logically.*

*Connectives:*

*Due to, therefore, consequently, as a result,*

*if, since, because, . . .*



## *B1.2 Plant hormones*

*June 20??*



*The plant hormone auxin (1)*

~~~~~

moves from the lit to the unlit side of the shoot (1).

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*As a result, the auxin is unevenly distributed (1)*

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which causes more growth on the unlit side so the shoot bends towards the light (1).



B1.2 Reflexes

June 20???

*The nerve impulse travels from the light-sensitive (sensory receptor) cell
to the sensory neurone (1).*

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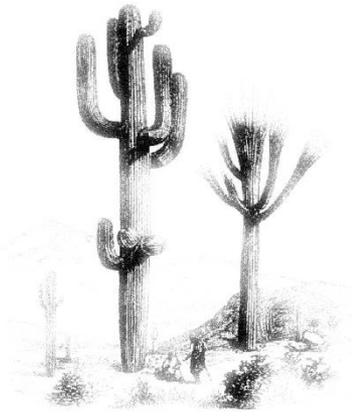
*From there the impulse travels to the brain/ CNS (1).*

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Once processed, the nerve impulse travels to the motor neurone (1),

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*The motor neurone is connected to the muscle in the eyelid (effector)  
which contracts to shut the eye (1).*



*Explain why you should avoid exertion if you are lost in a desert. (4)*

*To explain:*

*To link all points logically.*

*Connectives:*

*Due to, therefore, consequently, as a result,*

*if, since, because, . . .*





## B1.2 Homeostasis

June 20??

If you exert yourself in a desert your body temperature will rise (1).  
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Consequently you will begin to sweat to cool down (1).
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However, this means that you will lose water (1),  
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A low water concentration inside your body and body cells is dangerous as
body cells can be damaged or destroyed (1).



Statins, drugs prescribed by doctors to reduce blood cholesterol which builds up in the walls of blood vessels, reduce the rate of non-fatal heart attacks by about 30%. Side effects, such as serious muscle damage or kidney failure, are experienced by less than 0.1% of all patients. The cost of treating patients with statins can vary between £150 and £500 per year, depending on the type of cardiovascular disease being treated. Aspirin reduces the risk of non-fatal heart attacks by 31% and can be bought over the counter with treatments costing up to £15 a year. Side effects, such as bleeding of the stomach and slow blood clotting are experienced by around 0.5% of patients. The risk of damage to blood vessels in the brain is increased in older patients.

Compare the two drugs and decide which one of the two you would recommend to treat cardiovascular diseases. Justify your recommendation. (4)

To compare

To highlight the similarities and differences of two methods, processes, objects, commenting on both, not just one.

Connectives:

However, on the one hand, unlike, like, similar to,





B1.3 Drug evaluation

June 20??

I would recommend the use of **statins** to treat cardiovascular diseases. Unlike aspirin, it will not cause bleeding of the stomach or blood clotting difficulties (1) and fewer patients suffer from side effects (1). As it is prescribed by doctors, patients will be continuously monitored and any side effects can be treated quickly (1). In addition to reducing the risk of non-fatal heart attacks, it also reduces blood cholesterol which aspirin does not do (1).

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I would recommend the use of **aspirin** to treat cardiovascular diseases. The main reasons are that aspirin is much cheaper than statins (1) which means medical bills are reduced. The success rate in terms of reducing non-fatal heart attacks is also significantly higher with aspirin than with statins (1). Unlike statins, aspirin can be bought over the counter, it saves time waiting at the doctor's surgery (1). Finally, the side effects of using aspirin are much less serious than those caused by statins (1).







*Use specialist terms to describe how living things are involved in the constant cycling of carbon. (6)*

*To describe:*

*To give an ordered account of a process, method, etc.*

*Connectives:*

*First, next, finally,...*





## B1.5 Carbon Cycle

June 20??

**0 marks:** No relevant content.

**1-2 marks:** For at least one process the organism involved or the carbon compound used or the carbon compound produced or the process is named. Poor SPAG.

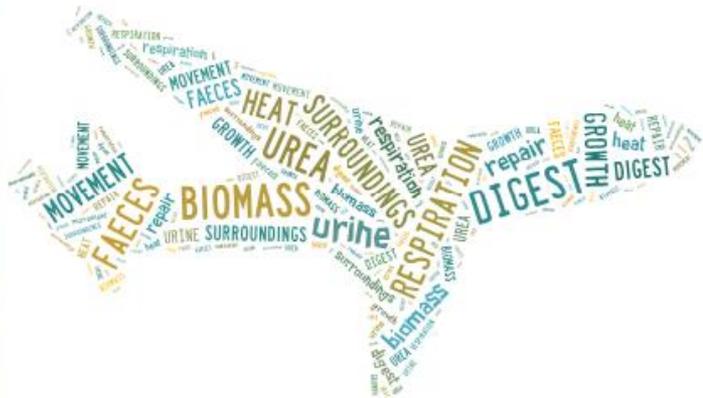
**3-4 marks:** For some named processes the organisms involved or the carbon compounds used or the carbon compounds produced are described. Some SPAG errors.

**5-6 marks:** For at least one named process an organism and the carbon compounds used or produced are described and other processes are described as for 3-4 marks. Almost faultless SPAG.

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Green plants take in carbon dioxide from the atmosphere during photosynthesis. The carbon contained is used to make cellulose, starch, proteins, fats and enzymes. When the plants are eaten by animals, the plant material is used during respiration which releases carbon dioxide back into the atmosphere.

Dead plants and animals are decayed by microorganisms which respire as well and return carbon dioxide to the atmosphere.



Only a small % of the Sun's energy captured by a lettuce is eventually incorporated into your body tissue. Explain what happens to the rest of the energy captured by the lettuce. (6)

To explain:

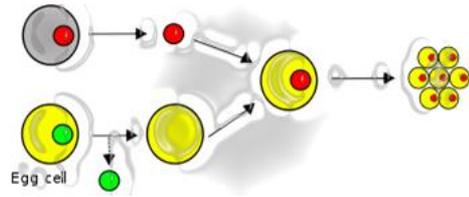
To link all points logically.

Connectives:

Due to, therefore, consequently, as a result,

if, since, because, . . .





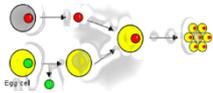
Describe how adult cell cloning could be used to clone a rare black lion. (6)

To describe:

To give an ordered account of a process or method.

Connectives: First, next, last, finally, then, following...





B1.6 Cloning

June 20??

0 marks: No relevant content.

1-2 marks: There is a simple description of the early stages of adult cell cloning. However, there is little other detail and the description may be inaccurate. Poor SPAG.

3-4 marks: There is an almost complete description of the early stages of the process and some aspects of the later stages. There may be some inaccuracies. Some SPAG errors.

5-6 marks: There is a clear, detailed and accurate description of all the major stages of adult cell cloning. Almost faultless SPAG.

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A body cell from the black lion is taken and the nucleus of this body cell is removed.

An unfertilised egg cell from a sand coloured lioness is used and again the nucleus of this cell is removed.

The nucleus from the black lion's body cell is placed into the empty egg cell.

An electric shock is applied which causes the egg cell to divide.

An embryo will form which can then be placed into the lioness' uterus.



*Describe how natural selection resulted in modern narwhals with long tooth tusks developing from ancestors with short tooth tusks. (4)*

*To describe:*

*To give an ordered account of a process, method, etc.*

*Connectives:*

*First, next, finally,...*





## B1.7 Evolution

June 20??

*Due to gene mutations, narwhals are born with a range of tusk lengths*  
(1).

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Those with long tusks are more successful in fighting off rival narwhals
(1).

~~~~~

*As a result they are able to survive and breed (1)*

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and pass on their gene(s) for a long tusk (1).