

Answering Extended Writing questions

In Brazil, ethanol has been used as a vehicle fuel for many years. Ethanol can be produced by the fermentation of plant sugars, such as those in sugar cane. It can also be produced from ethene gas. Ethene is made from crude oil.

Outline the advantages and disadvantages of producing ethanol from plant crops, compared to producing ethanol from ethene.

The quality of written communication will be assessed in your answer to this question.

QUESTION

Sugar cane is a renewable resource - you can grow it again. Ethene is a non-renewable resource, because it comes from crude oil. Fermentation happens at 37 °C. Ethene makes ethanol by reacting with steam at 300 °C. So fermentation needs lower energy inputs. But fermentation makes waste carbon dioxide. The other process makes no waste products. It is morally wrong to use land for fuel crops instead of food.

A*-B

Examiner: This answer clearly describes the advantages and disadvantages of the two processes. It is logically organised, and includes scientific terms that are used correctly. The spelling, punctuation, and grammar are accurate.

The answer would be even better if it made clear which statements refer to advantages and which to disadvantages.

Using ethanol made from sugar cane is carbon neutral. The sugar take in the same amount of carbon dioxide when they grow as the ethanol give out when it burn. Ethanol from ethene is not renewable. A disadvantage of ethanol from sugar is you should use land to grow food.

C-D

Examiner: The answer makes three correct points, and the spelling and punctuation are good. There are some grammatical errors. The answer explains the meaning of the term 'carbon neutral', but does not mention that making fertilisers for sugar cane crops causes carbon dioxide emissions.

Fermentation is good because you can grow shugar cane every year. The ethene method needs lots of energy

E-G

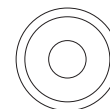
Examiner: The candidate knows that ethanol made from sugar cane is a renewable resource, but has not used the scientific word to describe this advantage. The second point is also correct. The candidate has not made it obvious how the two processes compare. There are two spelling errors and one punctuation error.

Exam-style questions

1 Scientists now know that the Earth is made up of several layers:

core crust mantle

a Use the words above to label the different layers in this diagram.



b Which layer is:

- i made of nickel and iron?
- ii a source of important raw materials for the chemical industry?
- iii made up of a number of large tectonic plates?

G-E

2 Large hydrocarbon molecules obtained from crude oil can be converted into smaller molecules by a process called cracking.

- a What conditions are needed for a cracking reaction?
- b Give one reason why cracking is important in the petrochemical industry.

D-C

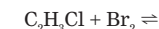
3 a The displayed formula of chloroethene is:



- i Why is this molecule described as unsaturated?
- ii A student adds bromine water to a small sample of this substance. What would she observe?

B-A*

iii Complete this balanced equation to show the reaction which happens when the bromine is added:



- b Chloroethene is a monomer used in industry to manufacture the polymer poly(chloroethene).
 - i Draw out the displayed formula of poly(chloroethene).
 - ii Poly(chloroethene) is used to make window frames. Suggest two properties which the polymer must have to make it suitable for this use.

B-A*

Extended writing

4 Olives grow in some parts of the world. They are a good source of oil. This olive oil is used in cooking, is eaten as a food, and can be used as a fuel.

Write about why olives can be used in this way.

5 Polymers are a very important type of substance in today's society. However, many people are worried about how to dispose of them.

Explain why disposing of polymers is a particular problem.

6 The atmosphere of the Earth today contains about 21% oxygen, 78% nitrogen, and 1% other gases.

Describe how the early atmosphere may have been different to today's atmosphere.

G-E

D-C

B-A*