AQA - Common atmospheric pollutants and their sources – GCSE Chemistry

1. May/2020/Paper_8462/2F/No.2

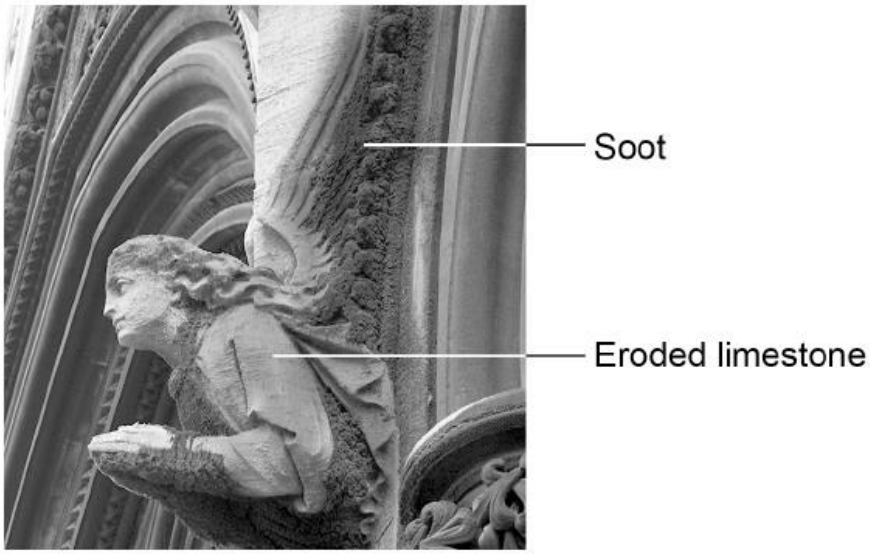
This question is about atmospheric pollution.

Figure 3 shows a limestone carving which has been damaged by atmospheric pollution.

The carving has been:

- blackened by soot
- eroded where the limestone has reacted with atmospheric pollutants.

Figure 3



What reacted with the limestone to cause the erosion?

[1 mark]

Tick (✓) **one** box.

Acid rain ☐

Ammonia ☐

Carbon monoxide ☐

Oxygen ☐

Soot is produced by the incomplete combustion of diesel oil.

Complete the sentences.

Choose answers from the box.

[2 marks]

ammonia	**carbon**	**methane**
nitrogen	**oxygen**	

Incomplete combustion happens when there is not enough _____.

Incomplete combustion produces particles of _____.

Complete the sentence.

[1 mark]

Particles of soot in the atmosphere cause global _____.

Carbon monoxide is produced by the incomplete combustion of methane.

Balance the equation for the reaction.

[1 mark]

$$2\,CH_4 + 3\,O_2 \rightarrow \_\_\_\_\,CO + 4\,H_2O$$

Car engines work at high temperatures.

Complete the sentences.

Choose answers from the box.

[3 marks]

air	**methane**	**oxides of nitrogen**
oxygen	**petrol**	**sulfur dioxide**

In car engines, nitrogen is present.

The nitrogen in car engines comes from _____.

At high temperatures, the nitrogen reacts with _____.

This reaction produces _____.

2. May/2020/Paper_8462/2F/No.10

This question is about hydrocarbons.

Hexane and hexene are hydrocarbons containing six carbon atoms in each molecule.

Hexane is an alkane and hexene is an alkene.

Draw **one** line from each hydrocarbon to the formula of that hydrocarbon.

[2 marks]

Hydrocarbon	**Formula**
	C_6H_8
Hexane	C_6H_{10}
	C_6H_{12}
Hexene	C_6H_{14}
	C_6H_{16}

Bromine water is added to hexane and to hexene.

What would be observed when bromine water is added to hexane and to hexene?

[2 marks]

Hexane _____

_____

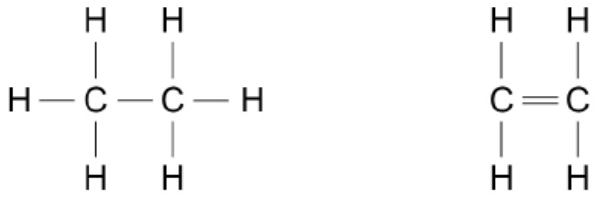
Hexene _____

_____

Ethane is an alkane and ethene is an alkene.

Figure 8 shows the displayed structural formulae of ethane and of ethene.

Figure 8



Ethane **Ethene**

Compare ethane with ethene.

You should refer to:

- their structure and bonding
- their reactions.

[6 marks]

3. May/2020/Paper_8462/2H/No.6

This question is about atmospheric pollution.

Figure 3 shows a limestone carving which has been damaged by atmospheric pollution.

The carving has been:

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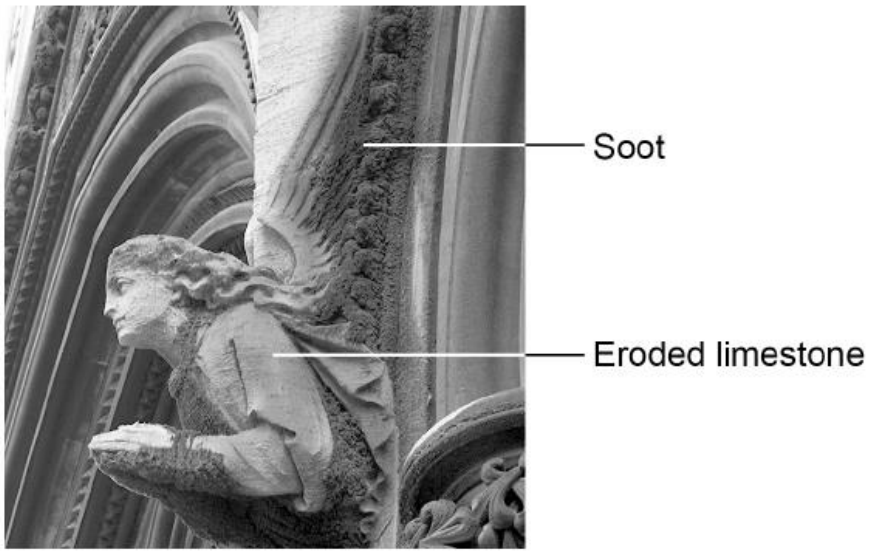
Figure 3



Explain why soot is formed when some fossil fuels are burned.

[2 marks]

Fossil fuels are burned in car engines.

Explain how reducing the amount of sulfur in fossil fuels reduces the erosion of limestone.

[4 marks]

Oxides of nitrogen are atmospheric pollutants which are formed in car engines.

Explain why oxides of nitrogen are formed in car engines.

[2 marks]