



Option: Atmospheric Chemistry
Chemistry Past Exam Questions
Higher Level

2013

Section B - Question 4 K - D

B Write a balanced equation for the formation of ozone in the stratosphere.

2012

Section B - Question 11 C - B

B

- (i) Give one major commercial use for nitrogen gas. (4)
- (ii) Explain why nitrogen gas is chemically inert. (6)
- (iii) What is meant by the *fixation* of nitrogen gas in the atmosphere? (6)
- (iv) Describe how atmospheric nitrogen gas is fixed by lightning. (9)



Page 7 of 8

2011

Section B - Question 4 K - B

B What is meant by the *greenhouse factor* of a gas in the atmosphere?

2009

Section B - Question 11 B

Write balanced chemical equations showing

- (i) the formation of ozone in the stratosphere,
- (ii) the photodissociation of ozone. (10)

CFCs are a group of substances known to have caused damage to the ozone layer.

- (iii) State two effects of damage to the ozone layer.
- (iv) Give one former major use of CFCs.
- (v) Give an example of a CFC.
- (vi) Identify the group of compounds now used as ozone friendly CFC replacements. (15)

Section B - Question 11 B

A

In 2007 former US Vice-President Al Gore and the UN Climate Change Committee were awarded the Nobel Peace Prize for their work in highlighting climate change. Al Gore has stressed the need to control global carbon dioxide emissions. Carbon dioxide is a greenhouse gas and an acidic oxide.



Al Gore

- (i) Explain the underlined terms. (7)
- (ii) State two major ways by which human activities contribute to the addition of carbon dioxide to the atmosphere. (6)
- (iii) Carbon dioxide is removed from the atmosphere when it dissolves in rainwater, in seas, in lakes, etc.
What three chemical species form as a result of carbon dioxide gas dissolving in water? (9)
- (iv) Acidic oxides can be removed from waste gases by scrubbers in chimneys before the gases are released into the atmosphere. Name a reagent used in scrubbers to remove acidic oxides. (3)

2007

Section B - Question 11 B

A

Environmentalists are concerned about the increasing abundance of carbon dioxide in the atmosphere.

- (i) State one important way carbon dioxide is constantly added to the atmosphere. (4)
- (ii) Carbon dioxide is a greenhouse gas. It has been assigned a greenhouse factor of 1. What use is made of the "*greenhouse factor*" of a gas? (6)
- (iii) Name two other greenhouse gases. (6)
- (iv) Carbon dioxide is removed from the atmosphere when it dissolves in rainwater, seas, lakes, etc. What three chemical species arise in water as a result of carbon dioxide gas dissolving in it? (9)

2005

Section B - Question 11 C - B

B

- (i) Account for the inert nature of nitrogen gas. (7)
- (ii) What is meant by *nitrogen fixation*?
State two ways by which nitrogen is fixed in nature. (9)
- (iii) The concentration of NO_2 in the atmosphere has increased in the past fifty years. Describe with the aid of chemical equations how an increase in the number of cars has contributed to this change. (9)