

11.4 Carbon Dioxide and Methane

Question Paper

Level	IGCSE
Subject	Chemistry (0620)
Exam Board	Cambridge International Examinations (CIE)
Topic	Air and Water
Sub-Topic	11.4 Carbon Dioxide and Methane
Booklet	Question Paper

Time Allowed: 23 minutes

Score: /19

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	60%	45%	35%	25%	<25%

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- 1 Which statement about methane is **not** correct?
 - A It is a greenhouse gas.
 - B It is an alkene.
 - C It is formed by decomposition of vegetation.
 - D It is used as a fuel.

- 2 Which process does **not** produce carbon dioxide?
 - A complete combustion of a fossil fuel
 - B fermentation
 - C reaction of an alkali with a carbonate
 - D respiration

- 3 Carbon dioxide and methane both contribute to climate change.
Which process produces both gases?
 - A complete combustion of natural gas
 - B farming cattle
 - C heating calcium carbonate
 - D respiration

- 4 Unwanted vegetation is sometimes placed in a bin where it decays to form compost. This compost can be used to fertilise soils.

Which gas is likely to be present in a higher percentage inside the bin than in the air outside the bin?

- A carbon monoxide
- B methane
- C oxygen
- D sulfur dioxide

- 5 Carbon dioxide and methane are 'greenhouse gases' which contribute to global warming.

Which process does **not** increase global warming?

- A burning fossil fuels
- B decay of organic waste
- C farming cattle for beef
- D growing crops such as sugar cane

- 6 These statements are about a gas.

- 1 It is produced by thermal decomposition of a carbonate.
- 2 It is produced by the fermentation of glucose.
- 3 It makes up 1% of unpolluted air.
- 4 It is produced during the production of steel from iron.

Which statements are correct for carbon dioxide?

- A 1 and 2 only B 1, 2 and 3 C 1, 2 and 4 D 1, 3 and 4

7 Gas X is a waste gas from digestion in animals.

Gas Y is formed when gas X is burnt with a small amount of oxygen.

Gas Z is formed when gas X is burnt with an excess of oxygen.

What are X, Y and Z?

	X	Y	Z
A	carbon dioxide	methane	carbon monoxide
B	carbon monoxide	methane	carbon dioxide
C	methane	carbon dioxide	carbon monoxide
D	methane	carbon monoxide	carbon dioxide

8 The list gives four experiments carried out with calcium carbonate.

- 1 acid added
- 2 alkali added
- 3 heated strongly
- 4 water added

Which experiments produce carbon dioxide?

- A** 1 and 2 **B** 1 and 3 **C** 2 and 3 **D** 2 and 4

- 9 Which statement about methane is **not** correct?
- A It is a liquid produced by distilling petroleum.
 - B It is produced as vegetation decomposes.
 - C It is produced by animals, such as cows.
 - D It is used as a fuel.
- 10 Which pollutant gas is produced by the decomposition of vegetation?
- A carbon monoxide
 - B methane
 - C nitrogen oxide
 - D sulfur dioxide
- 11 In which process is carbon dioxide **not** formed?
- A burning of natural gas
 - B fermentation
 - C heating lime
 - D respiration
- 12 Which information about carbon dioxide and methane is correct?

		carbon dioxide	methane
A	formed when vegetation decomposes	✓	x
B	greenhouse gas	✓	✓
C	present in unpolluted air	x	x
D	produced during respiration	x	✓

key
✓ = true
x = false

13 The list shows four methods that were suggested for the formation of carbon dioxide.

- 1 action of an alkali on a carbonate
- 2 action of heat on a carbonate
- 3 complete combustion of methane
- 4 reaction of a carbonate with oxygen

Which methods would result in the production of carbon dioxide?

- A** 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 3 and 4

14 Which process does **not** produce carbon dioxide?

- A** combustion of petrol
B reaction between an acid and a metal hydroxide
C reaction between an acid and a carbonate
D respiration

15 Gas X is a waste gas from digestion in animals.

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16 Carbon dioxide and methane are 'greenhouse gases' which contribute to global warming.

Which process does **not** increase global warming?

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17 The table gives the composition of the atmosphere of four newly discovered planets.

planet	composition of atmosphere
W	argon, carbon dioxide and oxygen
X	argon, nitrogen and oxygen
Y	argon, carbon dioxide and methane
Z	methane, nitrogen and oxygen

On which planets is the greenhouse effect likely to occur?

- A W only
- B W, X and Z
- C W and Y only
- D W, Y and Z

18 Greenhouse gases may contribute to climate change.

Two of these gases are emitted into the atmosphere as a result of processes within animals.

Gas1..... is produced by process3..... .

Gas2..... is produced by process4..... .

Which words correctly complete gaps 1, 2, 3 and 4?

	1	2	3	4
A	CO	C ₂ H ₆	digestion	respiration
B	CO	C ₂ H ₆	respiration	digestion
C	CO ₂	CH ₄	digestion	respiration
D	CO ₂	CH ₄	respiration	digestion

19 A newspaper article claims that carbon dioxide is formed as follows.

- 1 during respiration
- 2 when calcium carbonate reacts with hydrochloric acid
- 3 when methane burns in air

Which statements are correct?

- A** 1, 2 and 3
- B** 1 and 2 only
- C** 1 and 3 only
- D** 2 and 3 only