



C9bD Climate Change and Atmospheric Pollutants: Exam Drill

AQA 8464 · Calculator allowed · about 40 minutes

Total Marks

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Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

1 Name one greenhouse gas produced by human activities that contributes to global warming.

- (a) Name one greenhouse gas produced by human activities that contributes to global warming. (1)

(Total for Question 1 is 1 mark)

2 Complete the sentence. The enhanced greenhouse effect is the increase in the Earth's average temperature caused by an increase in the concentration of gases that trap _____ in the atmosphere.

- (a) Write the missing word. (2)

(Total for Question 2 is 2 marks)

3 State one major human activity that increases atmospheric carbon dioxide concentration.

- (a) State one major human activity that increases atmospheric carbon dioxide concentration. (2)

(Total for Question 3 is 2 marks)

- 4** The global warming potential (GWP) of methane (CH_4) over 100 years is about 28 times that of CO_2 . A farm emits 4.5 tonnes of CH_4 in a year. Calculate the CO_2 -equivalent emissions from this methane in tonnes $\text{CO}_2\text{-e}$. Show your working.

(a) Calculate the CO_2 -equivalent emissions from 4.5 tonnes CH_4 . Use $\text{GWP} = 28$. (3)

(Total for Question 4 is 3 marks)

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- 5** Sulfur dioxide (SO_2) is an atmospheric pollutant formed when sulphur impurities in fuels are burned. Give two environmental problems caused by SO_2 .

(a) Give two environmental problems caused by SO_2 . (3)

(Total for Question 5 is 3 marks)

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- 6** A factory releases 1500 kg of CO_2 per day. The company wants to report this as tonnes per year. Calculate the total annual CO_2 emissions in tonnes. Show working and state the unit.

(a) Convert 1500 kg per day to tonnes per year. (4)

(Total for Question 6 is 4 marks)

Mark scheme · C9bD Climate Change and Atmospheric Pollutants: Exam Drill

Question 1

- (a) **B1** one valid greenhouse gas: carbon dioxide or methane or nitrous oxide or fluorinated gases, cao
- (a) **Answer: Carbon dioxide**

Question 2

- (a) **B1** heat cao
- (a) **B1** accept thermal energy as an alternative wording
- (a) **Answer: heat**

Question 3

- (a) **B1** burning fossil fuels (for example: coal, oil, gas) cao
- (a) **B1** an additional supporting detail, for example naming a use such as electricity generation or transport, oe
- (a) **Answer: Burning fossil fuels for energy or transport**

Question 4

- (a) **M1** method: multiplies mass CH₄ by GWP (4.5 x 28) or shows equivalent calculation
- (a) **A1** 126 tonnes CO₂-e cao
- (a) **B1** unit given: tonnes CO₂-e
- (a) **Answer: 126 tonnes CO₂-e**

Question 5

- (a) **B1** acid rain formation (SO₂ leads to acid rain) or damage to buildings and statues, oe
- (a) **B1** harm to plant life or reduced crop yield, oe
- (a) **B1** respiratory health problems in humans or increased air pollution, oe
- (a) **Answer: Any two of: acid rain that damages buildings, harm to plants and crops, respiratory health problems in people.**

Question 6

- (a) **M1** method: converts kg to tonnes and multiplies by days per year or shows 1500 kg x 365 then divide by 1000
- (a) **A1** 547.5 tonnes cao
- (a) **B1** working shown: 1500 x 365 = 547500 kg then 547500 / 1000 = 547.5 tonnes
- (a) **B1** unit stated: tonnes or t
- (a) **Answer: 547.5 tonnes**